UNDERSTANDING THE SOCIO-CULTURAL CONTEXT OF OBESITY IN RURAL ITAUKEI FIJI: 'A PARTICIPATORY RESEARCH APPROACH'

Kamal Nand Singh

RN, MPH, MHM, PGDip Advance Nurs, BNursing

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Abstract

Obesity is a complex, multifactorial non communicable diseases involving environmental, social, cultural, genetic, physiological, metabolic, behavioural and psychological components. In recent decades, the burden of obesity has increased rapidly in developing South Pacific islands, and has exceeded the prevalence seen in developed countries. Obesity is more than just an individual problem; it is a community problem, driving up health care costs and reducing productivity. Hence, communities play an important role in lifting the health of their members by promoting healthy lifestyle changes. The research aims to determine strategies for enhancing the capacity for obesity prevention and action in rural areas of Fiji, in light of the general health characteristics of a village community and their socio-cultural constructions of health relevant to obesity. A sequential explanatory mixed methods design was utilised, incorporating community-based participatory research principles and process. This design involved community consultation, a health survey, interviews, dissemination of findings to the community and feedback from the rural community of iTaukei in Naitasiri Province. Data were analysed using the Analysis Grid for Environments Linked to Obesity (ANGELO) framework. The village health survey revealed that 50% of participants were obese. Forty-nine per cent of participants earned less than 2000 Fijian dollars (FJD) per year, which limited food choice to cheaper options that were usually high in fats and calories. The survey identified that only 22% of the participants were engaged in physical activities, and only 8% women were doing any sort of physical activity.

Interview analyses revealed food intake and physical activity were associated with socio-cultural, economic, political and physical environmental factors that influenced obesity. The findings also indicated that in order to more effectively address obesity, health care providers and policymakers need to be involved with, recognise and appreciate iTaukei culture and traditional ways, and promote equitable participation in decision-making with rural communities. In addition, it was felt that there is a need to develop a culturally appropriate approach to designing and delivering health promotion programs because every iTaukei village will have different ways of dealing with health matters. This research calls for social policy, which includes full participation of the local community that incorporates iTaukei goals, cultural wellbeing and fairness. This research suggests that bringing together the cultures of government healthcare providers with iTaukei communities would improve access to health care for iTaukei communities. In future, it is important for health care providers to consult with iTaukei communities, tailoring health service delivery to the needs and preferences of the rural iTaukei communities and embedding cultural competence within the health care providers' culture, governance, policies and health promotion programs in order to prevent obesity.

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List of Abbreviations

AIDS	Acquired Immune Deficiency Syndrome
ANGELO	Analysis Grid for Elements Linked to Obesity
BMI	Body Mass Index
CBPR	Community-Based Participatory Research
CDC	Centre for Disease Control and Prevention
CVD	Cardiovascular Disease
DMO	Divisional Medical Officer
Dr	Doctor
HIV	Human Immunodeficiency Virus
IOTF	International Obesity Taskforce
MOH	Ministry of Health
NCDs	Non-Communicable Diseases
NGO	Non-Government Organisation
NHANES	National Health and Nutrition Examination Survey
OECD	Organisation for Economic Co-operation and Development
OPIC	Obesity Prevention in Communities
QUT	Queensland University of Technology
RN	Registered Nurse
SDCN	Subdivisional Charge Nurse

SDMO	Subdivisional Medical Officer
SMART	Specific, Measurable, Achievable, Realistic and Timely
SPSS	Statistical Product and Service Solution
STEPs	STEPwise Approach to Surveillance
UK	United Kingdom
USA	United States of America
WHO	World Health Organization

Statement of Original Authorship

The work contained in this thesis has not been previously submitted to meet requirements for an award at this or any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

QUT Verified Signature

Signature:

Date: 17 August 2017

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Vinaka Vakalevu

Dedication

‘I want to talk to my families and my wife because she is always beside me so that she can look after me and cook and do my entire domestic duties for looking after the family. If she dies, I will have no support, and I will get sick very quickly as she always looks after me well.’ (Participant 3)

As a Fijian researcher, it is important for me to acknowledge my present and past family members who were born in the paradise of the Fiji islands where this research took place. The statement quoted above, from one of the participants, signifies how families and community are connected through culture and social cohesion. Fijians ‘walk the talk’ with our families and community as health is embedded in our culture and is integrally linked with families.

Chapter 1: Introduction Bula Vinaka

> *Researchers involved in research Indigenous people must approach any project from a position of humility and cultural safety. Research is never done on the people but with people, acknowledging their rights recognising their sovereignty and respects their perspectives*.
> (McMurray & Clendon, 2015)

1.1 INTRODUCTION

Chapter 1 presents an overview of the research proposal. The first section describes the context of the research, its background, the researcher's relationship with the Pacific Island communities, and the researcher's perspectives about obesity, as well as the incidence of non-communicable diseases (NCDs) in the rural Fiji islands. The second section outlines the research title, aims and questions and the significance of the research. The final section summarises the expected outcomes for the researcher and the participants.

This doctoral research study examines the socio-cultural context of obesity using a community-based participatory research (CBPR) methodology in a rural iTaukei community in Fiji. Additionally, this research was conducted in three sequential phases, each aimed at a different perspective of the situation. It started with establishing the health research team, partnership engagement to determine the research question, developing the research methodology and a literature review. The second sequential phase involved developing a health survey of the community,

obtaining ethics approval, collecting data incorporating a health survey of the community, analysing the survey results, preliminarily dissemination of survey findings, initiating community intervention and conducting semistructured interviews. The final phase included analysing interviews, disseminating interview findings and receiving feedback and further input from the community to confirm the findings.

The findings of this research provide guidance and understanding about the socio-cultural factors that influence community's perceptions' about obesity and underpin knowledge for the future development of culturally safe health promotion programs to support better health outcomes and eliminate health disparities in the rural parts of Fiji.

1.2 BACKGROUND

Fiji is a proud Pacific Island country where people have thrived, despite extremely difficult circumstances from the 1870s during colonialism and political unrest. Fiji, which is located in the south-west Pacific, consists of 330 islands in the vicinity of Fiji waters. Fiji is the central hub for the other south-west Pacific nations'. Fiji is a small country with 869,458 thousand people (Fiji Bureau of Statistics, 2007) and a history of colonialism. There is evidence of conflict between iTaukei[1] and Western ideologies. Since colonisation, Western ideologies have had a major influence over the iTaukei traditional ideologies and here I asked myself, should we continue to allow Western ideologies to overpower iTaukei traditional ideologies in their own

[1] Fijians, officially known since 2010 as *iTaukei*, are the major Indigenous people of the Fiji islands, and live in an area informally called Melanesia (Office of the High Commissioner for Human Rights (OHCHR), 2012).

country or motherland? Therefore, should iTaukei communities continue to dispute the influence of Western lifestyle behaviour verses culture[2], values[3], attitudes[4], and beliefs[5]? To seek answers to these metaphors, our research will be able to highlight the issues, which contribute to iTaukei health and wellbeing.

The culture of iTaukei communities is woven into their everyday life, including collective programming of the mind, which differentiates the member of the community from others. For the iTaukei perspective of the sociocultural factors, a social anthropological point of view is favoured, based on the notion that 'for all communities, it is through its culture that values, beliefs and concepts are developed' (Wate et al., 2013). These beliefs and associated patterns of behaviour are often learned during childhood, when adults pass on 'obvious' or taken-for-granted knowledge and behavioural patterns to their offspring, 'as such, cultural values and beliefs are largely unconscious factors in the motivation of individual behaviours' (Waqa, Moodie, Schultz, & Swinburn, 2013).

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[2] Culture is defined as 'a set of guidelines (both explicit and implicit), which individuals inherit as members of a particular society and which tell them how to view the world, how to experience it emotionally and how to behave in it in relation to other people, to supernatural forces or Gods and to the natural environment' (Helman, 2013, p. 147).

[3] Values are referred as 'that which is considered desirable, which is thought worthy of pursuing, regardless of whether or not it is actually being pursued' (Palispis, 1995, p. 28)

[4] Fishbein and Ajzen (1977, p. 204) described attitude as 'a person's attitude is a function of his salient beliefs at a given point in time'.

[5] Agne, Daubert, Munoz, Scarinci, and Cherrington (2012, p. 45) distinguished beliefs from knowledge by defining belief as 'justified belief' and as something 'which can be true or false even though held to be true by the subject'. Belief involves cognitive functions because it encompasses knowledge, opinions, beliefs, and thoughts in general.

In the Pacific Islands cultures, including iTaukei, the values of respect, love, and cooperation are important (Nabobo-Baba, 2006). Values are played out in food-related activities. Values are attached from its production to its consumption. Becker, Gilman, and Burwell (2005) suggested that the concept of respect is reflected in the act of offering food or other goods and services to the recipient. Becker, et al. (2005) described how, in one part of Fiji, iTaukei food providers would at times deprive themselves of food in order to offer food to others and thus establish cooperation through mutual respect. However, iTaukei staple foods have been influenced by a global transition of nutrition and the adoption of a Western lifestyle, which is now causing an epidemic of overweight and obesity around the globe, including in Fiji.

Overweight and obesity is a complex, multifactorial NCD involving problems include environmental, social, cultural, genetic, physiological, metabolic, behavioural, and psychological components (Bagchi & Preuss, 2012). According to the World Health Organization (2013b), 'Obesity is a disease associated with additional body fat, with an increased number of burden and life-threatening diseases, such as an increase in cardiovascular, metabolic and other NCD's with a (Body Mass Index) BMI greater than or equal to 30'. The usual definition of overweight is a BMI greater than or equal to 25. Appendix 1 outlines the international classification for an adult being overweight, obese, or underweight, based on BMI. According to the World Health Organization (2013b), 'BMI is a simple index of weight-for-height that is commonly used to classify overweight and obesity in adults. It is defined as a person's weight in kilograms divided by the square of his height in meters (kg/m2)'(World Health Organization, 2016).

Almost all nations, therefore, are facing an obesity endemic, although much disparity occurs between and within nations. Sedentary lifestyles and nutritional caloric intake have increased for most people around the world as a result of industrialisation, urbanisation, and power/mechanical changes. This applies to low-income nations. In Fiji, sedentary lifestyles and nutritional caloric intake is predominantly impacts young adults. Concomitantly, people's improved economic status appears to encourage overeating, resulting in obesity and metabolic syndromes in all age groups. As a result, governments of low-income nations have seen the need to develop new policies and strategies for the future and within existing regulated and managed projects. It is hoped such action will counteract those factors that are rapidly increasing the level of malnutrition, as demonstrated by obesity levels, and concern about diseases such as diabetes, cardiovascular disease (CVD), and metabolic syndrome (Ellulu, Abed, Rahmat, Ranneh, & Ali, 2014).

Statistical reports from both high and lower income nations show significant, and extreme, escalations in the obesity levels in all population groups. Obesity and its related NCDs have been shown by the WHO to be a new epidemic (Ellulu, et al., 2014). The World Health Organization (2013b) predicts obesity and NCDs will affect the majority of lower and middle-income nations, with the expected number of new cases to exceed hundreds of millions within the next two decades.

Over the last 30 years, obesity has changed from a minor health issue, which predominantly affected developed countries, to a major concern for all health sectors throughout the world. According to Bray (2014), the most affected populations to date, North America, Australia, New Zealand, and

Europe, have been well studied; however, as obesity is increasing globally, it is important for the problem to be studied elsewhere. For this reason, this doctoral study addresses the situation of obesity within Fiji.

Finucane et al. (2011) analysed the data on the prevalence of overweight and obesity from 1980 to 2008 for 1.9 million adults in 199 countries. For 28 years, the prevalence of obesity doubled in every region of the globe. By 2008, 1.5 billion adults were estimated to have a BMI of 25 or more. Of these adults, 500 million were deemed obese.

Another study undertaken by Bray (2014), demonstrated that the largest prevalence of obesity was in females. The regions with the highest to the lowest obesity rates were southern Africa, North Africa, the Middle East, central Latin America, North America, and southern Latin America. The top five regions for male obesity were Australasia, Central Europe, North America, central Latin America, and southern Latin America. About 25 years ago, obesity levels for high income earners with high socioeconomic status (SES) in low-income countries were considered to be due to socioeconomic factors. However, Bray (2014) reports that obesity is a status symbol, mainly for females, in low socioeconomic developing nations.

The prevalence of obesity in many Pacific islands is as high as, or even exceeds, the level occurring in developed countries (Dancause et al., 2013), with trending data indicating extremely high rates of obesity. According to the World Health Organization (2016), the prevalence of obesity on Nauru is around 65% for males and 70% for females, with a similar rise documented in the urban centres of Papua New Guinea: 36% for males and 54% for females. In the Samoan island urban district, 58% of males and 77% of

females are considered obese, while rates are increasing in the regional rural areas, with 42% of males and 59% of females considered obese (World Health Organization, 2016).

Further, obesity is a significant cause of mortality in the world, contributing to 36 million deaths per year, and is responsible for 47% of the world's burden of illnesses (Puoane, Tsolekile, Sanders, & Parker, 2008; Tse, Laverack, Nayar, & Foroughian, 2011). Obesity can be described as an NCD (Aarons, Fettes, Sommerfeld, & Palinkas, 2012), adding to the already increasing incidence in Fiji of CVD, strokes, HIV, cancers, chronic respiratory illnesses, and diabetes (Minkler, 2000; Puoane, et al., 2008; Tse, et al., 2011).

According to Swinburn, Millar, et al. (2011), behavioural changes occur with economic development, which contributes to an increase in NCDs. With economic development, diets include more packaged, processed, and Western foods, while physical activity levels decline as participation in sedentary labour increases (Dancause, et al., 2013). The continuing threats of infectious diseases and poor nutrition are already straining the health care systems of developing countries due to lack of money, insufficiently skilled personnel, and inadequate infrastructure to satisfactorily treat obesity and NCDs (Bagchi & Preuss, 2012). The high rates of obesity and NCDs in the island nations of Samoa, Nauru, Fiji, and Melanesia show evidence of this crisis, and it is truly epidemic (Popkin, 1998). Popkin and Doak (1998) have identified nearly half the population in the South Pacific region as being obese, with the prevalence among females higher than males (Swinburn, Millar, et al., 2011).

According to Minkler (2000), risk factors for NCDs are unhealthy nutritional intake, physical inactivity, smoking, alcohol abuse, genetics, and, often, age. The burden of obesity and the risk factors have risen since the progression of economic globalisation and urbanisation. This has been affected by the social determinants of health in Fiji, such as poverty, lack of health knowledge, declining health literacy, lack of health resources, lack of infrastructure, and an unhealthy ecology (Aarons, et al., 2012; Viswanathan et al., 2004).

1.3 SOCIO-CULTURAL KNOWLEDGE AND HEALTH LITERACY

Obesity and non-communicable diseases (NCDs) are largely preventable by understanding the connection between socio-cultural knowledge, changes in lifestyles and behaviours. Increased health literacy has proven to be a powerful tool alleviating Indigenous health and developing public health policy (Bell, Tumilty, Kira, Smith, & Hale, 2016). Prevention and control of obesity (especially abdominal obesity) with decreased unhealthy food intake, along with a 30–50% increase in physical exercise and activities would lower the risk of NCDs by approximately 50–75% (Mohan et al., 2016).

Supportive environments and communities are significant in shaping prevention, including detection and management. This includes making healthier food choices and regular physical activity better options for a population and improving accessibility, availability, and affordability to ensure health becomes a priority in obesity prevention (World Health Organization, 2013b). This is a significant challenge because changes in dietary and physical activity patterns are often the result of environmental and societal changes associated with development, and a lack of supportive policies in

sectors such as health, agriculture, transport, urban and rural planning, environment, food processing, distribution, marketing, and education (World Health Organization, 2013a).

The community under study in this doctoral research, the iTaukei, is a rural community with low health literacy and minimal awareness of obesity. A number of studies have been published which emphasise the wide-ranging factors, which have impact on obesity, such as urbanisation, globalisation, sedentary behaviour, economics, and body image. These are discussed in the Literature Review chapter. Mavoa and McCabe (2008) state that very few studies have investigated how socio-cultural knowledge affects healthy eating and physical activity; however, no studies to date have investigated socio-cultural knowledge and health literacy and awareness, using the CBPR approach, in the rural iTaukei communities.

1.4 CULTURALLY APPROPRIATE OBESITY PREVENTION FOR ITAUKEI

Several global studies have explored the role of community perception and the meaning of obesity in society and culture, while also investigating its association with the risk of NCDs for Indigenous populations (Pujilestari, Ng, Hakimi, & Eriksson, 2014); however, there have been no studies based on the iTaukei. As Meo-Sewabu (2015) explains, understanding of health in the iTaukei community is not derived from Western influences or philosophical underpinnings, which differentiate between a person's physical and cognitive states; the iTaukei community's understanding has been adopted from a newer, biomedical perspective. Meo-Sewabu conceptualises this as 'Tanoa' (health belief model), which he describes as wellbeing and recognised socio-

cultural beliefs of health. Hence, iTaukei understand health from a physical perspective and in its spiritual form, integrated with familial and socio-cultural factors (Meo-Sewabu, 2015). For iTaukei, being connected to *Naqele* (land), *Na Vosa Vakaviti* (language) and *Matavuvale Kece veiwekani* (extended family) are the dominant factors that shape how they perceive their health and cultural traditions.

We (the iTaukei community) are a collective society, so it is very important to acknowledge in early stages of this doctoral research to consider the role of culture in obesity prevention and wellbeing. Therefore, culture is about understanding the life-giving values from which individuals, families, and society can draw strength, empowerment, and resilience that contribute to a healthy lifestyle. The Lowitja Institute (2015) elaborates that the term *social determinants of health* is well defined, and literature has been published and applied to communities to uplift the health and wellbeing of the community; however, cultural determinants of health are under researched, even though these exist in the Indigenous communities. Therefore, culture is enabled on a more personal basis for individuals, society, and families that may bring positive outcome for Indigenous health. Brown (2014, p. 12) defined cultural determinants of health as 'cultural determinants originate from and promote a strength based perspective, acknowledging that stronger connections to culture and country build stronger individual and collective identities, a sense of self-esteem, resilience, and improved outcomes across the other determinants of health including education, economic stability and community safety'. Cultural determinants of health formed the foundational structure of this doctoral thesis, where iTaukei chose to approach the cultural

constructs of obesity prevention and wellbeing among the rural iTaukei community. Professor Brown discussed evidenced–based research to understand how cultural determinants of health were relevant in developing programmes and policies that were relevant to the Indigenous people.

Much of the literature about iTaukei health recognises how health and obesity prevention could be promoted within the community through the use of innovative approaches, campaigns, and initiatives to help eliminate health disparities in rural, remote, and urban communities (Snowdon, Lawrence, Schultz, Vivili, & Swinburn, 2010; Swinburn et al., 2007; Thow & Snowdon, 2010; Waqa, Mavoa, Snowdon, Moodie, Nadakuitavuki, et al., 2013). However, cultural contexts of health and cultural values were not embedded in iTaukei health and wellbeing. It is acknowledged that iTaukei communities do not have a clear definition of cultural determinants of health, but it is sensed that those aspects of culture which adapt resilience are beneficial for preventive health care and contribute to the identity of the iTaukei and their unique location within the Pacific region. Healing, empowering, and preventive health aspects of culture can involve but are not restricted to iTaukei identity, connection to land and language, traditional cultural practices, spirituality and belonging and traditional knowledge towards health.

This research identified that the cultural determinants of health approach is an effective and relevant way to promote obesity prevention and wellbeing outcomes across the social determinants of health. A recent study by The Obesity Prevention in Communities (OPIC) research group from 2004 – 2008 on obesity prevention has identified a need to understand socio-cultural factors to develop appropriate health promotion activities that could

better express the practices, attitudes, habits, and beliefs of populations. The official report identifies specific interventions that could ameliorate the avoidance and prevention of obesity while being acceptable to the iTaukei community (Swinburn, et al., 2007). It shows how conventional approaches are inadequate in tackling health problems of high-risk population groups, such as the iTaukei community, and highlights the need to find more community-specific ways of promoting health and providing health facilities to these populations (Swinburn, et al., 2007). This study also shows that strong socio-cultural links and practices improve obesity prevention outcomes across the social determinant of health.

Therefore, any health programmes developed in association with Indigenous communities that fail to recognise and promote cultural perspectives are incorporated and may have potential for further negative impacts on society (Brown, 2014). A 'social and cultural determinants' approach recognises that many factors of ill-health lie outside the direct responsibility of the health sector and therefore require a collaborative and inter-sectoral approach (Ward, 2015, p. 141).There is a growing body of evidence showing that protection and promotion of traditional cultural knowledge, families, culture, and kinship contribute to community cohesion and personal resilience.

1.5 DEVELOPING EFFECTIVE HEALTH PROGRAMS FOR INDIGENOUS RURAL COMMUNITIES

According to many scholars, few community-wide health programs instil specifically designed and culturally suitable strategies (Kreuter, Lukwago, Bucholtz, Clark, & Sanders-Thompson, 2003; Waqa, Mavoa, Snowdon,

Moodie, Schultz, et al., 2013). Hulley, Cummings, Browner, Grady, and Newman (2013) documented the main focus of community-wide health research for white and middle-class populations, while noting there was an ongoing uncertainty within health care regarding the need for programs of health promotion and intervention for underprivileged populations, or the need for targeted programmes for underserved populations. However, Hulley and colleagues research, based on common consensus, developed an understanding of the characteristics of specific groups using particular health interventions and programs. According to Hulley, et al. (2013), research on common health care issues, such as alcohol and drug consumption, smoking, and HIV/AIDS, was based on specific behavioural differences from Indigenous communities in the past. These researchers concluded that an emphasis should be placed on effective communal engagement using appropriate research initiatives for the specific underserved population, and they recommended methods of conducting research for the identification of culturally appropriate health programs and initiatives.

Kreuter, et al. (2003) explain that the period from the mid-1990s to the early 2000s was a characterised by comparative studies where the primary research focus was race and ethnicity. During this time, strategies for health delivery and promotion had only to focus on the ethnic backgrounds and racial groupings to be considered effective interventions. In textbooks on common community-wide health programs, various cultural strategies and interventions began to be published (Nilsen, 2006).

Kreuter, et al. (2003) contended that since 2000 research has moved to a more innovative paradigm where testing and designing new strategies,

approaches, and interventions for health promotion across racial and ethnic minority communities has become widespread. More recent literature on community-wide health programs emphasises the need to focus on the unique socio-cultural characteristics of racial and ethnic groups to address the persistent health disparities (Israel et al., 2011; Pujilestari, et al., 2014; Pyett, 2002; Renzaho, 2004). Minkler and Wallerstein (2010) suggest that participatory research holds crucial significance for the progress of community-wide programs for health promotion.

1.6 SOCIO-CULTURAL, ETHNICITY AND HEALTH LITERACY IN OBESITY PREVENTION

There is clearly a need for obesity prevention interventions to recognise and engage a community's specific social perspective, and take into account the inequalities prevalent among various races and ethnicities (Braithwaite, Taylor, & Treadwell, 2009). Rimer and Glanz (2005) suggest three measures to explain the importance of culture and ethnicity and the health consequences. These are morbidity and mortality rates, the prevalence of risk behaviours, and health behavioural determinants, all of which interact based on ethnic diversity and racial differences. Rimer and Glanz (2005) explain that there are numerous reasons for the prevalence of obesity as a disease in racial and ethnic minorities, in addition to genetic predisposition. Braveman et al. (2005, p. 2886) further illustrate this concept as 'the complex interaction between ethnicity, socioeconomic position, gender, access to quality health care and overall health status'.

The above research provides an overview of various environmental barriers, both social and physical, that could impede the success of health

interventions for obesity. Poor dietary choices and lack of physical activity are considered, not only from the perspective of biomedicine and socio-cultural determinants, to ascertain how obesity is culturally perceived and understood. Lack of access to affordable food choices and healthy food alternatives, lack of facilities for physical activity, and lack of family and workplace support all influence the individual's 'cultural norms, views and perspectives that establish rules for living that extend to cultural meaning of disease and its management' (American Association of Diabetes Educators, 2007, p. 137).

Culture is an important component in understanding health behaviours and in describing how a person makes sense of his physical wellbeing and how he or she maintains a healthy lifestyle (Papps & Ramsden, 1996). This is a significant reflection for community-wide health programmes, since the weight- and diet-related actions of ethnic groups largely depend on cultural understanding, traditions, and beliefs (Helman, 2013).

Helman (2013) advises that ethnicity and race should not be confused with cultural underpinnings and explains that culture is entirely different to the other two attributes. There are important points of distinction across varying ethnic and racial groups about educational and socioeconomic perspectives, which change from one group to another. These differences should be given equal weight when designing and delivering health-related programmes and campaigns across communities. In a similar vein, Braithwaite, et al. (2009) argued that Indigenous communities exhibit various characteristics among themselves and hence should not be considered homogeneous. Within Indigenous groups and racial classes, the variability of power relationships is

equally important, as are issues of gender disparity, language barriers, and religious misunderstandings: each has the potential to empower some groups while completely silencing others.

1.7 CULTURAL SAFETY AND HEALTH PROMOTION APPROACHES

The concept of cultural safety has been around in the Pacific region since 1990, most recognisably in the work done by Ramsden (2002) and the New Zealand Nursing Council (2005). Cultural safety has been described as:

> The effective nursing practice of a person or family from another culture, and is determined by that person or family. Culture includes, but is not restricted to, age or generation; gender; sexual orientation; occupation and socioeconomic status; ethnic origin or migrant experience; religious or spiritual belief; and disability. (New Zealand Nursing Council, 2005, pp. 7-8)

The most widespread definition of cultural safety is:

> An environment which is safe for people, where there is no assault, challenge, or denial of their identity, of who they are and what they need. It is about shared respect, shared meaning, shared knowledge and experience of learning together with dignity and truly listening' (Williams, 1999, p. 213).

This definition is embeded in this doctoral thesis.

To have culturally appropriate health promotion programmes it is essential to underpin effective communication, recognising the power relationship between the health care provider and the community who use the service and respecting the identity and world views of the people. According to Duke, Connor, and McEldowney (2009), a competent health practitioner must embed cultural safety principles while caring for people with diverse ethnic backgrounds. Embedding cultural safety in the health care

workforce, Duke and colleagues suggested revising the current policies, which prevent practising cultural competence, recognising the marginal group utilising the service, and supporting the healthcare professionals with resources to meet the needs, including cultural competency in recruiting the health care workforce and including cultural competency and cultural safety outcomes for community or individuals as organisational quality measures (Duke, et al., 2009).

Braithwaite, et al. (2009) stated that ethnic groups encounter numerous hurdles including cultural, social, and economic impediments, and that cultural safety needs must be addressed while collecting health information. However, as described by Braithwaite and colleagues, cultural safety is widely discussed but lacks a common definition applicable across health fields. Braithwaite and colleague define cultural safety as the extent to which cultural, ethnic, economic, social, and environmental factors shape the design, evaluation, and delivery of health-related initiatives and interventions for the targeted community, including changes in behaviour, programme patterns and relevant materials (Braithwaite, et al., 2009).

Further, Kreuter, et al. (2003) established key components used by health promotion practitioners to make health programs specific and more culturally sound. These are:

- peripheral strategies that include ‘surface structure’ characteristics that pertain to the materials, and aids used in the programs and initiatives, for example the use of images, illustrations, colours, and pictorial representations to identify with the traditions and norms of

certain racial and ethnic groups, and to resonate with their values and attitudes

- evidential strategies that include the tactics involved in portraying the importance of a health issue by illustrating its impact and the consequences of its prevalence using epidemiological representations
- linguistic strategies used to overcome linguistic barriers by transcribing a health programme from one language to another so as to make the information meaningful to particular groups
- constituent-involving strategies to adopt simple rules of community participation that entail the main inputs directly obtained from community people that eventually assist in decision-making and planning practices
- socio-cultural strategies derived from the 'deep structure' characteristics of cultural sensitivity wherein the values, behaviours and beliefs of a person or group are acknowledged, reinforced and established further to obtain contextual information about health-related patterns of actions while utilizing this information in planning for interventions and initiatives. (Kreuter et al., 2003, p. 136)

Very few of these strategies have been used as part of previously conducted health promotion schemes and campaigns related to obesity prevention and targeting indigenous populations. I believe that iTaukei communities should be questioning our (Fijian) healthcare policy from the standpoint of cultural safety rather than equal opportunity, positive

discrimination, and anti-racism. Though iTaukei have been advocating ‘cultural safety’, it was never named as such (Ward, 2015). We as iTaukei have been preoccupied with Western-dominant concepts of positive discrimination and equal opportunity. It could be argued that these Western paradigms have served Fijian well, and that may have been true to an extent in the very early years, but is certainly not the case now. We have only to mention these concepts, and our policymakers’ counterparts become defensive. The following chapter will include a critical discussion and detailed review of these campaigns, programs, and initiatives, and will elaborate upon community-based participatory research (CBPR) that includes constituent-involving and socio-cultural strategies as the key methodological criteria for health-related programs administered to iTaukei populations.

1.8 RESEARCHER’S RELATIONSHIP WITH THE ITAUKEI COMMUNITY

Ontological philosophies within the study are based on the insider (emic)/outsider (etic) viewpoint (Leitch & Harrison, 2016). In undertaking the research, my position reflects because both insider and outsider is possible. As an insider lens, it allows me to hold the values, perspectives, behaviours, beliefs, and knowledge of the iTaukei/cultural community that is under study, whereas the Indigenous-outsider has assimilated into outsider culture and is thus perceived as an outsider by the iTaukei people of my community. This allows me to adopt an emic role to interface the iTaukei traditional custom system and collectively to do the research in a flexible way, as opposed to having just an insider or an outsider position. I was born in Fiji, from an iTaukei mother and a Fijian-born, Indian-decendent father of *Yasana* (province) Naitasiri. My relationship with the village is based on my mother’s

family. I belong to *Waimaro Tikina* (district), *Soloira Tikina Vou* (subdistrict). I completed my primary school education in Fiji. From there I moved to New Zealand and Australia, where I have lived most of my adolescent and adult life. During my lifetime, I have maintained strong connections with the iTaukei community. I have also worked in rural parts of Naitasiri Fiji as a public health nurse.

Meo-Sewabu (2015, p. 55) explains that the goal of insider or outsider views is to describe behaviour 'as seen from the cultural insiders' lens'; however, an outsider view will discuss behaviour from a viewpoint that is external to the culture, looking at concept of what may 'apply equally well to other cultures'. The outsider viewpoint would also include various settings and build cross-sectional similarity but an insider lens is more like conducting village observation, experiencing the village lifestyle, and conducting surveys that are part of the methods utilised in this research as an insider. My position as an insider meant I did not have to familiarise myself with the research environment or with the participants and I had a pre-existing knowledge of the iTaukei culture. My insider/outsider position meant I was able to ask meaningful questions and read nonverbal cues and also I was able to 'project a more truthful, authentic understanding of the culture under study' (Greene, 2014, pp. 3-4). Therefore I was able to 'understand the cognitive, emotional, and/or psychological precepts of participants as well as possess a more profound knowledge of the historical and practical happenings of the field' (Chavez, 2008, p. 481).

It is incumbent upon any piece of qualitative research and/or any qualitative researcher to be explicit about the role they play in shaping the

research findings. As an iTaukei researcher, I suggest the following conceptualisation of the directionality of understanding: the ‘insider/ outsider’ perspective and the ‘outsider/ insider’ perspective. The insider/outsider position in this context represents the understanding of phenomena of interest from the perspective of the iTaukei people themselves, while the 'outsider/insider' perceptive represses a consideration of the iTaukei people from the perspective of an outsider, as someone looking into the iTaukei ways of being (Baba, Mahina, Williams, & Nabobo-Baba, 2004). As a researcher, I believe my cultural heritage as a Fijian man offers the potential to gain a deep and highly nuanced understanding of the iTaukei experience from the perspective of the rural iTaukei village people themselves, and to therefore represent the 'insider/outsider’ perspective. However, it could be argued that a potential limitation of this study is my inability to achieve a genuinely objective ‘outside/insider’ perspective. In other words, it is not possible for me to recognise when my understanding of a phenomenon is drawn from my perspective as a Fijian man and when it is influenced by my perspective as a relative outsider, who has been educated and practiced as a nurse in New Zealand and Australia. While, as an iTaukei researcher, I have gone to great lengths throughout this study to ensure I acknowledge and address any potential for cultural bias, it is worth identifying at is an area of consideration throughout the thesis itself.

In embodying an insider and outsider role applied in this doctoral research is viewed as an iTaukei lens; however, it leans more towards the insider viewpoint. Therefore, lesson learnt have important valuable perception into what is understood as ethical practice within the iTaukei

community, which has a widespread application to this study which was undertaken across other types of structural variance. The structural variances have been discussed earlier in the chapter where the iTaukei position themselves within the *vanua*[6] and the land (*qele*). The iTaukei association with *vanua* and land is important; therefore, I have highlighted and argued my position as an insider, an outsider, and a doctoral research student and the integration between them, and I have particularly focused on what is ethical from the iTaukei perspective. This enabled me as the researcher to build strong relationship bonds and allowed me to follow the cultural protocols and procedures which are important within the *vanua.*

In the iTaukei communities it is important to acknowledge protocols of the *vanua* and the land. As an iTaukei researcher, I am never an individual person but always part of the collective community. Although according to the university's perspective the research needs to be my own, conducting research in my own cultural background and environment means that I as an iTaukei need to adhere to my community's cultural obligations and protocols as a collaborative partnership but, most significantly, must acknowledge the ethical process of my *vanua* and land. While doing this research I needed to consider that my actions did not go against my cultural values, bringing shame on my families and myself for a lifetime as this research has been,

[6] *Vanua*, in context of the way of knowing refers to 'a people , their chief, their defined territory, their waterways or fishing boundaries , their environments, spirituality, their history, their epistemology and culture'(Nabobo-Baba, 2006, pp. 155-157)

within the iTaukei world view, developed collaboratively and reflects on the whole iTaukei community.

Brunger and Wall (2016) described ‘ethical guidelines’ from the Indigenous perspective, which includes following the cultural obligation and protocols in accordance with the *vanua* and land. Employing the cultural protocols of the *vanua* and the land protected my cultural position as an iTaukei researcher. I had learnt from my mother that going on my own in the iTaukei village would cause insult to my immediate maternal families and to those accepting me in the community. Therefore I took guidance from the subdivision charge nurse (SDCN) who also lives in the same village. I involved a group of maternal families who were also trained health professionals living in the village, whom I refer to as the ‘health research team’. The role of the health research team was that of ‘gatekeeper’: they ensured the research was conducted culturally ethically and was culturally appropriate. A Fijian researcher described a similar term to gatekeeper as ‘cultural discernment’ (Meo-Sewabu, 2015). Meo-Sewabu (2015, p. 58) defined cultural discernment as a ‘process in which the society or group of people collaborate to ensure that research is conducted in an ethical way within the cultural context of the study setting’.

At QUT I needed to convince my supervisory team and ethics committee that I needed to engage and form a health research team, before engaging the community, and take them with me to the village. This task was difficult to articulate in writing to my university ethics committee and my supervisors, so I had to orally convince them of the concept of iTaukei cultural ethical protocols, which are not well documented in iTaukei literature.

However, several iTaukei researchers had had similar experiences to mine, and these researchers had developed the *Vanua* Research Framework (Nabobo-Baba, 2006) and *Tali Magimagi Framework* (Meo-Sewabu, 2015), and several other methodologies have been developed, which tell Indigenous world views using cultural ethical protocols (Brunger & Wall, 2016; Fishbein & Ajzen, 1977; Helman, 2013). From this involvement, I have a clear understanding that obesity is a current health problem for the community. Further, I am aware of and knowledgeable about a number of factors that contribute to health inequalities; these include insufficient resources, a lack of motivation, the community's feelings of powerless, and the individuals' perceptions and education levels in the rural parts of Fiji.

Such poor health status is impacting upon the current society, especially in the rural regions of Fiji (Mavoa & McCabe, 2008). For example, in Fiji the life expectancy for males is 65174.5 years and for females is 68.8 years. These comparatively poor levels result from a number of factors, namely, lifestyle changes, economic globalisation, urbanisation, environmental changes, social isolation, and decreased physical activity (Salomon et al., 2012). The increased rates of obesity have inspired me to undertake the current study to gain a more comprehensive understanding of the socio-cultural context contributing to this epidemic of obesity in the rural communities of the Fiji islands.

A review of the literature revealed that no studies had been conducted in rural Fiji with respect to the relationship between the socio-cultural context and obesity, making this research the first study to do so. Therefore, my role as an insider gives me a greater understanding of the nuances and culturally-

specific importance within the research setting. The CBPR approach links cultural aspects that are acknowledged with the culture itself. The CBPR approach incorporates reflexivity, protecting my cultural position within the research setting and also who the participants are, signified in the research output. This process examines the issue from an insider perspective, using the iTaukei lens.

1.9 CBPR AND RURAL ITAUKEI

The CBPR approach remains widely applicable and is appropriate for this study because it attends to socio-cultural values, norms, attitudinal tendencies, and perceptions of the people, based on interacting with them in a direct environment or setting through participation across various platforms (Wallerstein & Duran, 2006). CBPR has been successfully implemented within programs for Indigenous populations in developing countries and has informed culturally competent health programs and interventions on a global scale (Holt et al., 2013; Israel et al., 2010; Jaime, Silva, Gentil, Claro, & Monteiro, 2013; Minkler, 2010; Pyett, 2002; Rifkin, 1990; Thorp, Owen, Neuhaus, & Dunstan, 2011; Viswanathan, et al., 2004; Windsor, 2013) and for populations of Aboriginal women across Australia (McHugh & Kowalski, 2009).

McHugh and Kowalski (2009) suggest that researchers developing public health programmes need to consider socio-cultural sensitivity and to be inclusive of diverse cultural groups and minority populations when devising and planning for health-related interventions and programmes. Health promotion programmes for iTaukei, therefore, should consider the colonisation effects on both remote and rural communities in iTaukei

populations, especially with respect to their health regimes. As Minkler and Wallerstein (2010) explained, isolation and marginalisation produce long-term, devastating effects on people's social unity, cultural norms, self-image, and economic wellbeing. For this reason, rates of morbidity and mortality for iTaukei and other Indigenous populations are comparatively higher than for non-Indigenous populations. This supports the use of CPBR when interacting with Indigenous communities. CBPR is a research approach that recognises and balances health disparities and status inequalities, particularly those that constitute complex phenomena in political, social, cultural, and economic systems, including factors such as poverty, lack of housing and shelter, environmental degradation, pollution, social exclusion, and racism, to name a few (Israel, Eng, Schulz, & Parker, 2013; Israel, Schulz, Parker, & Becker, 1998; Israel, et al., 2011; Onwuegbuzie & Teddlie, 2003). Additionally, CBPR is considered to be a good fit and an appropriate approach while conducting research using Indigenous principles and is particularly relevant within the iTaukei community (Minkler & Wallerstein, 2011; Mohammed, Walters, LaMarr, Evans-Campbell, & Fryberg, 2012).

1.10 RESEARCH OUTLINE

The research title, aim, and question, and the objectives of the research and the expected outcomes of this research are discussed in this section of Chapter 1.

1.10.1 Research Title

The research title represents and describes the study's aim, namely:

Understanding the socio-cultural context of obesity in rural areas of iTaukei Fiji: 'A Participatory Research Approach'.

1.10.2 Research Aim

The aim of this research is to understand the social and cultural components which contribute to obesity in a rural area of the Fiji islands. This study will use a single village as an exemplar by using the CBPR approach. It aims to improve understanding of the community's perceptions of obesity related behaviour in this unique social context.

To answer the research question, this thesis describes the experiences of the participants by exploring the socio-cultural context of the iTaukei community. A participatory, sequential, explanatory, mixed methods design was used, incorporating the CBPR principles and process to answer the research question. Bartholomew, Parcel, Kok, Gottlieb, and Fernandez (2011, p. 122) refer to CBPR as 'programmes or projects, which provide people with the skills, knowledge and experience needed to help them contribute to change the community'. CBPR is about supporting people to develop the culturally appropriate skills and knowledge they need to work together to bring about positive change within their community (Wallerstein & Duran, 2006). Within the CBPR literature, some interchangeable terms are used, such as community capacity–building, community development, and community empowerment; they are utilised in different studies underpinned by similar principles.

CBPR has significant strengths when applied to health promotion activities, in that who understand an issue, such as obesity and associated diseases, from the perspective of the community, in this instance the iTaukei community. To create an easily understood research process, the research used a logical sequence of activities and included the development of

personal skills, according to CBPR, improving health environments and reorientating health services. These include a reorientation of community priorities in the iTaukei community. This is described further in Chapter 4. This participatory approach was adopted because the iTaukei communities are interconnected so that any change at any level will affect many villagers. CBPR allowed all aspects of the communities to be better understood, including the interconnectedness of the local community.

A similar model was successfully used on Kadavu Island, Fiji. However, it was not sustainable due to a lack of resources once the AusAID funding was removed (Roberts, 1997). The Kadavu Island project involved villagers being provided with essential information on health issues, with the recommendation to make decisions within the current local government and traditional structures (Roberts, 1997). *The Ottawa Charter for Health Promotion* was used by initiating 'community learning', based on an adult education cycle of experience review, information seeking, policy development and community action planning. Village, district, and provincial councils were able to formulate public policies, mobilise community action, and create healthier village environments. This was a bottom-up development approach, from the village to the district and provincial councils, which clarified roles and responsibilities, identified resources, and developed processes as extensions of normal community practices. Unfortunately, Roberts' approach was not sustainable for two reasons: lack of ongoing funding; and the community was not inspired and became disengaged from the project once the funding was removed (Roberts, 1997).

1.10.3 Research Questions and Objectives

The research questions were shaped from, and are directly attributed to, the significant gap identified by the literature review, namely, a lack of evidence about obesity prevention in remote and rural regions of Fiji. In light of these evidence gaps, the following research questions were developed for the proposed study:

1. What are the general health characteristics relevant to obesity in rural areas of Fiji?

2. Which socio-cultural constructions of health are relevant to obesity from the perspectives of a rural community in Fiji?

3. What are the strategies for enhancing the capacity for obesity prevention and action in rural areas of Fiji?

The specific research objectives are:

1. To understand the factors that influence current food practices, physical activity levels, and behaviours contributing to obesity in a specific rural iTaukei community.

2. To explore how rural social networks may be beneficial in preventing obesity in a specific rural iTaukei community.

3. To analyse the socio-cultural factors related to food, physical activity, and behaviours, as well as the attitudes, beliefs, and values concerning obesity among an iTaukei rural community.

1.11 SIGNIFICANCE OF THE RESEARCH

Obesity is more than just an individual problem, it is a community problem. Hence, communities play a critical role in improving the health of their members by promoting healthy lifestyle changes. According to Swinburn, et al. (2007), the epidemic of obesity is on the rise in both developed and developing countries, and this is a major concern for the Pacific population. The prevalence of obesity is a contributing risk factor to NCDs, such as diabetes, CVDs, and cancer (Swinburn, et al., 2007), and WHO researchers studying obesity have linked the rapidly rising trend of obesity with the many devastating and life-threatening NCDs (Khoo & Morris, 2012).

This research has an impact on policy development for the rural iTaukei community to prevent obesity and reduce NCDs. It has the potential to inform a set of guidelines to influence policymakers in developing an evidence-informed policy for the rural communities. Further, the study makes an important contribution to public health intervention and improves the understanding of how to develop culturally evidence-informed policymaking capacity in Fiji and for other similar Pacific Island communities that have a high prevalence of obesity. The findings provide a better understanding of obesity and the socio-cultural context in rural communities and identify the factors that cause obesity. In addition, this study analysed how to prevent obesity by empowering the community using the CBPR principles. The findings include evidence and processes for the better management and prevention of obesity in rural areas of Fiji, underpinned by a greater

understanding of the factors that enabled community development and by empowering the participants.

This research provides an in-depth understanding of and prevention strategies for obesity, using a bottom-up participatory approach. It is anticipated that the current research will guide future obesity prevention determinants in the rural areas of Fiji. Such guidelines will be particularly important to the Ministry of Health of Fiji and other Pacific nations, where the prevalence of obesity is the highest in the world, which complicates already burdened health care resources (Swinburn, et al., 2007).

1.12 THESIS OUTLINE

The following section outlines the major elements of each chapter in the thesis.

Chapter 2 examines the prevalence and impact of obesity, demonstrating the need for adequate community-wide research on these issues, including broad participation from the community. The Literature Review begins with an examination of the main limitations faced in handling and treating epidemiological data, including barriers faced in obtaining the data. The later stages of the chapter will specifically focus on the main lessons and insights obtained from health promotion initiatives to better inform and administer future health promotion design and activities. Further, the design of interventional health promotion will be explained, and a critical assessment of the literature for obesity prevention mechanisms and interventions will be presented. The chapter will conclude with the presentation of identified research gaps with recommendations arising from

the literature related to the socio-cultural impacts on obesity prevention and the shape of culturally suitable holistic research.

Chapter 3 argues and justifies the Conceptual approach, together with its historical development and epistemological traditions. Various similarities and dissimilarities of CBPR will be discussed in the specific context of the iTaukei communities. The second part of the chapter will portray the research methods and designs adopted for this research, along with providing detail of the research principles. In addition, the discussion elaborates on the feedback criteria used in this CBPR research project.

In the following, **Chapter 4,** Community Consultation will relate to the CBPR process, especially in the iTaukei context, and address how this process develops the content for the research. It will also describe the entire process of community participation and its development. Further, the significance of gaining trust and reliability with the community before administering the research process will be expounded. In doing so, the role of the researcher will be discussed in relation to his contributions to the process that led towards sustained relationships of trust with the iTaukei communities.

A significant discussion on the formation of the research team and understanding the significance of feedback process follows with, firstly, a brief recap of the main purpose of this research, reasons behind the employment of the CBPR process, and the identified gaps in the research that this research project will address.

Chapter 5, discusses the findings including the methods chosen within this research and the analysis of the survey used to obtain information about

the general health characteristics of the village. This is followed by an explanation of the generation of deductive qualitative data gathered from interviews with the main community informants. Attention is given to the key themes laid by the Analysis Grid for Environment Linked to Obesity (ANGELO) framework that supports this research, and its subsequent contribution to the CBPR cylindrical cycle through an informed feedback process.

Finally, **Chapters 6 and 7,** the discussion and conclusion chapters discuss key lessons learnt from this research, the strengths and weaknesses of the research as well as the recommended measures of action that would guide future researchers in using the CBPR process while working with Indigenous iTaukei communities.

The thesis ends with a discussion about practical policy recommendations obtained from the research findings that will assist policymakers in making informed decisions to curb obesity in iTaukei communities. This can occur through relevant community-wide interventions, activities, and campaigns utilising an appropriate CBPR process. The thesis concludes with several recommendations for ongoing research informed by my research findings.

Chapter 2: Literature Review

2.1 INTRODUCTION

Chapter 2 presents an analysis of the literature related to factors that contribute to global obesity and, specifically, to the Pacific Island countries, with a focus on Fiji. The literature review will contextualise the research and conceptualise the literature. Identified gaps in current literature will be articulated.

The first section explains the purpose and aims of the literature review and the methods used to explore and organise the literature. The second section offers the literature review itself, where significant findings of the literature are overviewed. The final section discusses literature related to obesity in the context of the Fiji islands and identifies gaps in the literature.

2.2 SCHEMA OF LITERATURE REVIEW

The literature review commences with an examination of the global trends and patterns of obesity, socio-cultural factors, and participatory interventional studies with a focus on developed and developing countries. Next, the key findings from the literature review and the conclusion are presented. A visual chart illustrating the literature search process follows as Figure 2.1. This figure graphically presents the details and systematic process applied to gathering current literature related to the socio-cultural factors, environmental factors, and community intervention programs for obesity prevention.

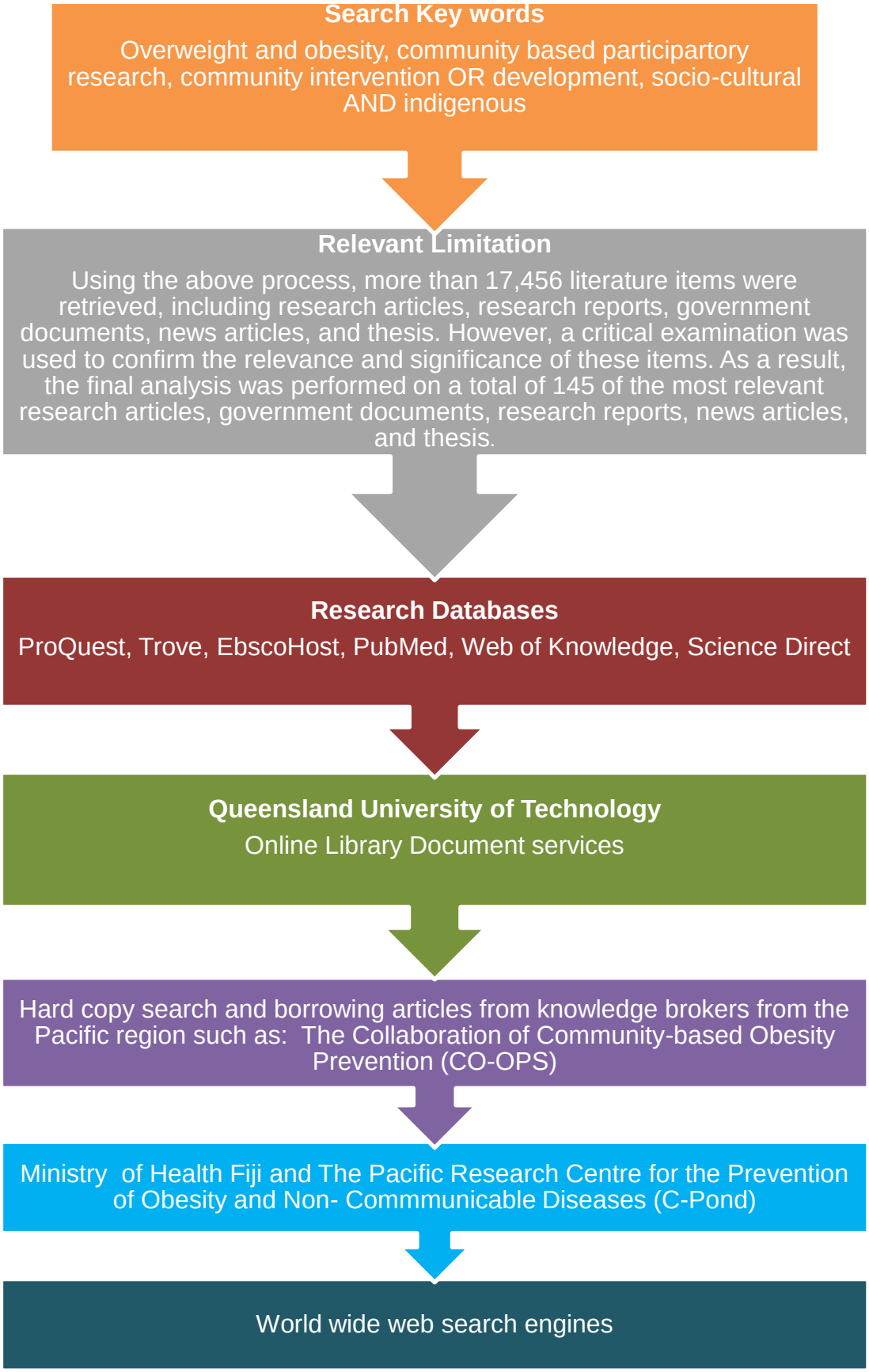

Figure 2-1. The process of literature search.

During the extensive literature review, considerable empirical evidence was found in relation to obesity. The information available focused on developing and developed countries. However, there was very little available on the socio-cultural factors related to obesity in rural areas of Pacific Island countries. This doctoral thesis precisely explores socio-cultural context understanding obesity and its prevention, particularly from the perspectives of iTaukei residing in rural areas. Figure 2.2 are results of the literature review are presented in seven sections, as follows:

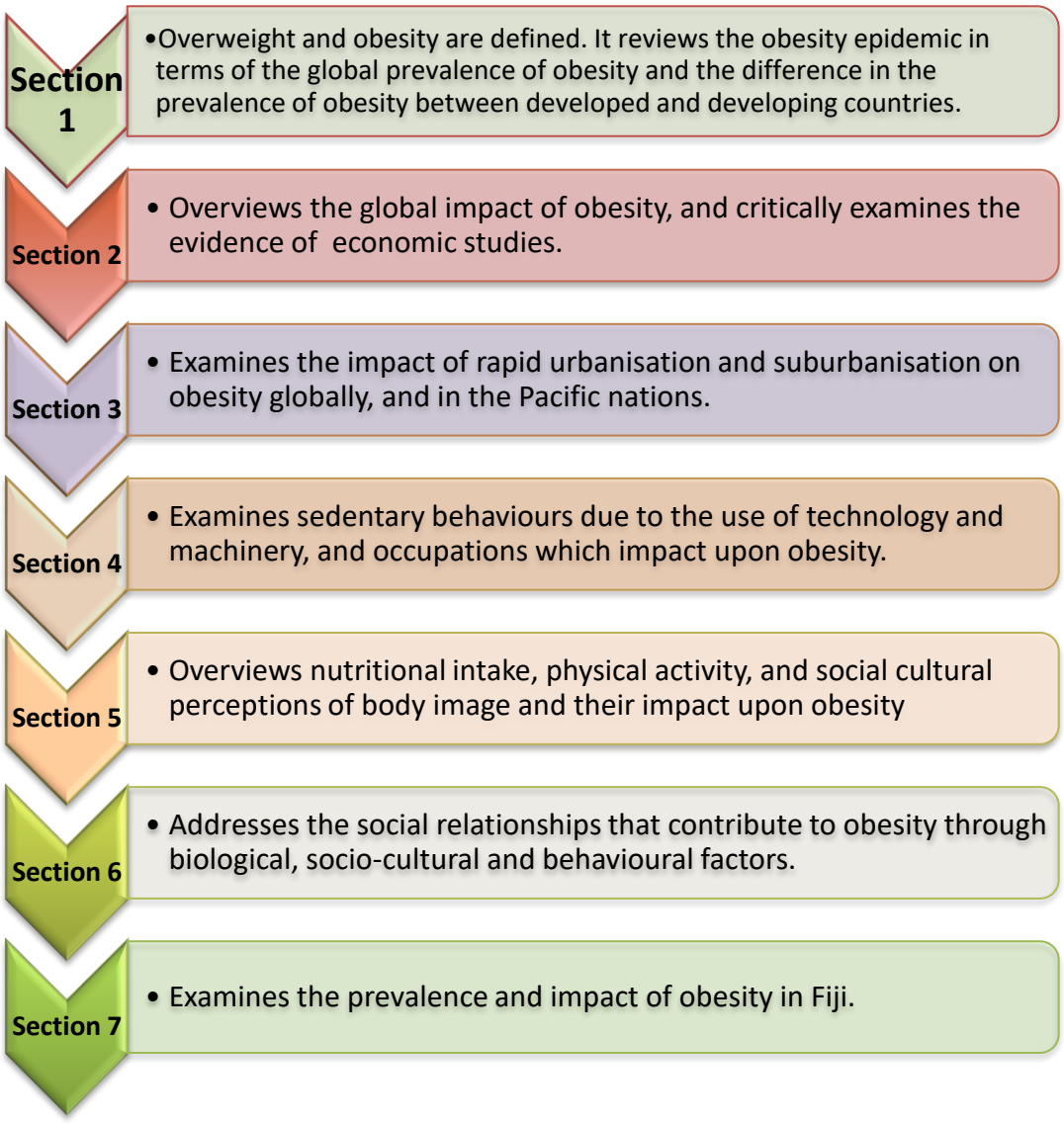

Figure 2-2. Results of the Literature Review

2.3 GLOBAL PREVALENCE OF OBESITY

Obesity is a complicated and barely understood condition. Obesity is a consequential condition, and its development is impossible to avoid. It is primarily preventable through lifestyle changes. Obesity is a global challenge and is indeed becoming epidemic. Researchers around the world argue that obesity is a growing epidemic due to massive economic, social, political, and socio-cultural challenges. Obesity affects all age groups, ethnic groups, and rich and poor people.

Obesity cannot be tackled just at the individual level. It is a global and community matter and must be approach as such. Effective control and management of obesity needs to be approached at the community-integrated level, and incorporate responses from all sectors of worldwide communities. World Health Organization (2016) stated that the global obesity rate has doubled since 1980. Thirty-nine per cent of adults aged 18 years and over were overweight and 13 % were obese in 2014; therefore, most people around the globe live in countries where mortality from being overweight and obese is higher than from being underweight (World Health Organization, 2016). Global changes in food intake and patterns of physical activity are mostly due to local environmental and societal challenges associated with development and inadequate supportive policies in areas such as health, agriculture, transport, rural and urban planning, environment, nutrition processing, distribution, marketing, and education (World Health Organization, 2016)

In 2010, the International Obesity Task Force (IOTF) findings reported that more than one billion adults were overweight, and more than 475 million

were obese. The IOTF projected that up to 200 billion school-aged children were overweight or obese. Among these, 40 to50 million were categorised as obese. In the European Union, 60% of adults (260 million) and over 20% of school children (12 million) were overweight or obese (World Health Organization, 2010d). The rate of obesity in adults and children had increased from 155 million, with the rate of children's obesity increasing by 10% (Taylor, Parento, & Schmidt, 2014).

The obesity epidemic began almost simultaneously in most high-income countries in the 1970s and 1980s. Since then, most middle-income and many low-income countries have joined the global surge in obesity for both adults and children (Sassi, Devaux, Cecchini, & Rusticelli, 2009).

2.4 PREVALENCE OF OBESITY IN DEVELOPED COUNTRIES

The current prevalence of obesity is higher in America than it was in 1960, and it is rapidly increasing. America has been combating obesity for the last three decades. The prevalence of obesity has increased despite multiple prevention and management strategies such as community programs, early care and education, let's move salad bar to school, implementation of healthy food service guidelines, creating healthy food environments in communities, and creating healthy hospital environments. These strategies had insufficient effect in the communities (Centres for Disease Control and Prevention, 2016). Flegal, Kruszon-Moran, Carroll, Fryar, and Ogden (2016) conducted a two-year national survey (2013–2014) of adults in America; the prevalence of obesity was 40.4% among females and 35% among males. The findings indicated that the prevalence of class-three obesity was higher among females (9.9%) than among males (5.5%).

These data indicated that between 2005 and 2014 there was a significant increase in the rate of obesity in females and no significant trends for males (Flegal, et al., 2016). The above findings indicate that there is a significant increase in obesity in America and the strategies are not sufficient, hence further studies are required to provide evidence-based practice, which supports obesity prevention and management nationally in America.

As revealed by the National Health and Nutrition Examination Survey (NHANES), a major rise in obesity among American adults aged 20–74 years was found between the first study cycle (1960 to 1961) and the third study cycle (1988 to 1994) (Centres for Disease Control and Prevention, 2010). A systematic review of studies conducted by Wang and Beydoun (2007) between 1990 and 2006 showed the prevalence of adult obesity and overweight had increased from 13% in 1960 to 32% in 2004. In American the prevalence of overweight and obesity, age-adjusted in 2010 was 32.2% among adult males and 35.5% among adult females.

Within cultural and Indigenous groups in America, obesity and overweight levels fluctuated between 31.9% among non-Hispanic white males and 37.3% among non-Hispanic dark males. The age-adjusted prevalence was 35.5%, fluctuating between 33% among non-Hispanic white females and 49.6% among non-Hispanic dark females (Flegal, Carroll, Ogden, & Curtin, 2010).

While America has seen an increase in the prevalence of obesity, the rise in obesity is noticeable in other developed countries. As reported by the WHO MONICA Project, all Western European countries and Australia have shown an increase in mean BMI and an increase in the prevalence of

overweight from the early 1980s and mid-1990s,respectively (Zhang, 2012). Overweight levels are lower in most European countries compared to America; however, the prevalence of overweight adults in Germany, Finland, and Britain had significantly increased by over 50% (Sassi & Devaux, 2012). Statistics from European countries (e.g. Germany, Finland, Sweden, the Netherlands, and England) have demonstrated that the prevalence of obesity was either steady or had been increasing over the past two decades (Organisation for Economic Co-operation and Development 2014).

The Organisation for Economic Co-operation and Development (OECD) 2009 Fact Book lists the obesity data for developed countries. Sassi and Devaux (2012) reported that the percentage of the population aged 15 and over with a BMI greater than 30 is higher in the developed countries. Developed countries saw a gradual increase in an individual's height and weight throughout the 19th century. In the 20th century, while populations from high-income countries began to approach their maximum genetic potential for longitudinal growth, they had begun to gain more weight than height, causing an increased mean BMI (Caballero, 2007). Worldwide, the prevalence of obesity has more than doubled since 1980, but the prevalence has varied in the different regions of the world (Sassi & Devaux, 2012).

All developed countries have revealed growing obesity levels over the last few decades, and some have disturbing rates. Mexico, New Zealand, and the United Kingdom are the three highest ranking obesity countries, after the United States, and this is believed to be due to their rapid economic change and to globalisation (Organisation for Economic Co-operation and Development 2014).

The prevalence of overweight and obesity continues to increase in Australia among the adult population. Australia is fifth among developed countries has rapid increased overweight and obesity (Australian Institute of Health Welfare, 2016). In 2012 the findings suggest 35.3% of adults were overweight and 27.5% obese, which in total means 62.8% were overweight and obese (Grech & Allman-Farinelli, 2016). A report released by the Australian Institute of Health Welfare (2016) mentioned that in 2014–15 almost half (45%) of adults aged 18–64 were inactive or insufficiently active for health benefits, which was similar to the proportion in 2011–12. The prevalence rate of overweight and obese adults increased from 56% to 63% between 1995 and 2014–15, an average increase of 4.4 kg for both males and females. Of the estimated 11.2 million adults who were overweight or obese in 2014–15, 4.9 million were obese. Overweight and obesity in Australia are more likely to be caused by sociodemographic, socioeconomic and socio-cultural factors related to dietary intake and physical activity. These factors are facing challenges due to lack of public health funding. Surveys have been undertaken by Australian Institute of Health Welfare (2016) at the national and state/territory level to screen the health status of the population. Dietary intake and physical activity are often components of these surveys; however, these are frequently limited to a few short questions that have direct relevance to public health food and physical activity matters, such as fruit and vegetable intake and creating healthy communities. Therefore, it is essential to include assessment of changes in dietary habits and physical activity over time, and questions and responses should be

standardised across national surveys (Australian Institute of Health Welfare, 2016) .

2.5 PREVALENCE OF OBESITY IN DEVELOPING COUNTRIES

Obesity is a continuing worldwide public health concern affecting people of all ages and socioeconomic societies. The global impact of obesity is significant because obesity is growing all over the world; it is also growing at a rapid rate in the developing countries, including the Pacific Island countries. Developing countries are experiencing a significant increase in rates of overweight and obesity, yet at the same time are continuing to face major economic difficulties and increased healthy food prices. While conditions linked with malnutrition are still challenging issues, these have now been overtaken by conditions associated with unhealthy lifestyles, overweight, and obesity. However, compared with the prevalence of obesity in the developed world, obesity in the developing countries has only recently been a challenge. In many lower and middle-income countries in the Asia–Pacific region, this challenge has been viewed as a burden on economic development (Asia Pacific Cohort Studies Collaboration, 2007).

These challenging issues faced by developing countries are linked with social and economic transitions: there are changes towards more wealthy social structures with a demand to compare themselves with Western society. Poobalan and Aucott (2016) argue that in developing countries, overweight and obesity among rich and poor people was never considered as a health issue until the early 1980 and 1990s and was labelled as a Western world issue. It is evident that developing countries are undergoing rapid transition, which is changing the social, economic, and political

environment and evolving cultural change in the communities with the expectation that the prevalence of overweight and obesity will increase in the future.

Popkin, Adair, and Ng (2012) study showed a rapid growth in obesity in a number of developing countries, such as China and Thailand, which equalled the obesity rates of the United States and other developed countries. In another study by Monteiro, Conde, and Popkin (2007), the prevalence of obesity among Brazilian males and females increased by 92% and 63%, respectively, between 1975 and 1989. From 1989 to 2003, the obesity rate remained stable for Brazilian females but increased for Brazilian males. In Thailand, the prevalence of obesity has doubled in the past 20 years. For males, it grew from 13.0% to 18.6%, while for females it grew from 23.2% to 29.5%, from 1991 to 1997; in 2004 it rose to 22.4% and 34.3%, respectively (Aekplakorn & Mo-suwan, 2009). In at least 10 of the Pacific Islands, overweight levels range from 50% to 90%, with the rates of obesity prevalence ranging from more than 30% in Fiji to 80% among female American Samoans (World Health Organization, 2010a).

While the prevalence of obesity in developing countries is lower than developed countries it should be viewed in relation to population, as a 1% increase in the prevalence of obesity in some developing countries, such as India and China, would see 20 million additional cases of obesity (Lim et al., 2013). Obesity in developing countries is related to the urbanisation process and is accompanied by dietary and behavioural risk factors. Urbanisation and subsequent lifestyle changes have been shown to increase the risk of obesity. Researchers recognise that these factors, promoted by agriculture

and multinational enterprises, provide cheap, highly refined fats, oils, and carbohydrates, commodities which have significantly modified traditional diets. The dominance of labour-saving machinery, inexpensive motorised transportation, and the social, environmental, and cultural perception of body size, along with increased food intake, decreased physical activity, and a sedentary lifestyle, all have an impact on obesity.

2.6 ECONOMIC GLOBALISATION: IMPACT ON OBESITY

Obesity has increased in parallel with globalisation. Economic globalisation, defined as a process characterised by the growing interdependence of the world's people, involves the integration of economies, culture, technologies, and governance (Chapman, 2009). Examples include international trade, improved telecommunication, labour migration, and an overall increase in the movement of the key factors of production, namely, land, labour, capital, and entrepreneurs.

A study conducted by Costa-i-Font, Mas, and Navarro (2013) in 23 countries over 15 years, identified three types of globalisation that contribute to obesity: economic, political, and social. Economic globalisation affects both developed and developing nations. Obesity affects poor and rich countries and has spread rapidly in the last two decades, leading to the term 'globesity'. Globesity is defined as the simultaneous development of obesity and advancement of economic globalisation (World Health Organization, 2010a). Such economic globalisation creates beneficial modifications to developing nations, such as growth in socioeconomic status and education, and a reduction in mortality (Aikins et al., 2010; Bhagwati, 2007; Misra & Khurana, 2008).

Globalisation has helped developed nations through increasing employment and efficiencies, thereby improving the quality of life (Sachs et al., 2009). However, economic globalisation has also generated significant concerns for developing nations, especially the impact on nutrition (Chopra & Darnton-Hill, 2006; Unwin & Alberti, 2006). Increasing obesity in virtually all nations is driven by changes in the globalised food system, namely, the distribution of more processed, inexpensive, and effectively advertised food (Swinburn, Sacks, et al., 2011).

According to Frenk (2012), economic globalisation promotes obesity because nutrition trading has caused an oversupply of unhealthy, low-cost, processed foods in developing countries (Abdulai, 2010). Foodstuffs imported through global trade are often promoted rigorously, with the aim of increasing consumption. Examples of such global traders are McDonalds and Coca-Cola and their high-impact global advertising (Labonté & Schrecker, 2007). Obesogenic food penetrates developing countries through the global business model. At the same time, the decrease of essential production by villagers in rural areas causes concurrent increases in obesity (Chopra & Darnton-Hill, 2006).

Drewnowski and Popkin (2007) demonstrated that economic globalisation plays a part in the early stages of the ‘nutrition transition’ in Fiji, where traditional primary diets rich in whole grains, fruits, and vegetables were substituted with ‘Westernised’ diets rich in fats and sugar, and nutritionally poor calories. A 20-year longitudinal study, conducted by Duffey et al. (2010), found obesity had repeatedly been related to an increase in the consumption of cheaper and ‘energy-intensive’ nutrition: food that is available

for purchase at comparatively lower prices than fresh food. This situation is a contributing factor to the rapidly increasing levels of obesity in Fiji. The nutrition transition, which occurred in previous decades in most developed nations, and in several developing countries, parallels the rise in obesity and social cost (Popkin, et al., 2012).

An increase in obesity has major health consequences. By the year 2020, Bhardwaj, Shewte, Bhatkule, and Khadse (2012) expect NCDs to account for 73% of deaths and 60% of the global disease burden. For example, raised BMI is an established risk factor for diseases such as type II diabetes, CVDs, and many cancers (Swinburn, Sacks, et al., 2011). NCDs are now the dominant cause of preventable disease in both low- and high-income countries. Obesity has overtaken tobacco as the largest preventable cause of disease burden in some regions (Hoad, Somerford, & Katzenellenbogen, 2010).

Powell and Chaloupka (2009) undertook a systematic review, from 1990 to 2008, about food and the specific economic determinants of an individual's obesity level, such as the density of fast-food restaurants and the price of meals. There was a significant correlation between them, which suggests that economic globalisation factors may have an impact on the obesity epidemic. Berghöfer et al. (2008) found evidence that obesity risk factors affect an individual's obesity, and that this is different for males and females. There is less understanding of the socio-cultural environment of obesity. However, a five-year study by Ulijaszek and Schwekendiek (2013) showed that obesity is household-produced and that social and

environmental influences, such as those resulting from globalisation, are likely to play a role.

From their study, Jebb, Kopelman, and Butland (2007) argue that an increase in obesity is projected to heighten the burden of obesity-related morbidity and mortality in the coming decade. To prevent future problems, and provide for those with obesity, diabetes, and CVD, it is vital to improve dietary patterns around the world (Popkin & Doak, 1998). Focusing on medical treatments and smoking reduction and regulating sodium in the diet will not halt the rising epidemic of obesity, nor the many related issues such as cardio metabolic problems, economic hardship, poor health, and other inadvertent consequences facing, in particular, low- and middle-income countries (Abubakari et al., 2009).

Costa-i-Font, et al. (2013) conducted a systematic literature review, which provides robust evidence that economic globalisation has a strong association with obesity, and that the effects of economic globalisation contribute to lower food prices and food transitions. A dramatic shift has occurred regarding how the global population eats, drinks, and mobilises. These changes clash with human biology and have created significant changes in body composition. Kastorini et al. (2011) predicted that, by 2030, an estimated 2.16 billion adults, worldwide, will be overweight ,while 1.12 billion will be obese due to food manufacture and supply patterns, combined with the rise in the number of inactive jobs (Kadiri, 2005; Maher, Smeeth, & Sekajugo, 2010). Additionally, due to rapid economic globalisation in developing countries, problems have arisen with inconsistencies in food labelling. According to the authors, this issue is a major contributing factor in

obesity and increases the risk factor of NCDs, particularly in the Pacific region.

In another study by De Vogli, Kouvonen, and Gimeno (2014), conducted from 1999 to 2008 in the OECD countries, evidence was provided about the relationship between the consumption of processed foods, the mean population BMI, and the influence of mislabelling food labels. Food labelling was found to be a contributing factor in higher rates of both obesity and BMI. These findings have significant implications for food labelling policies in developing countries.

It is well known that a lower cost of food is associated with an increase in the intake of a high-fat diet and that sedentary habits affect the relationship between economic globalisation and obesity. It is not so well known how social globalisation and the environment affect obesity. However, it does seem that obesity is cultivated in social and cultural terms, and social and cultural factors may be a driving force for economic globalisation (Costa-i-Font, et al., 2013). The current research seeks to identify whether, at the local level in rural areas of Fiji, the impact of economic globalisation affects food supply, and whether this, in turn, leads to obesity.

2.7 URBANISATION: IMPACT ON OBESITY

As a consequence of rapid growth in economic globalisation and urbanisation, and the subsequent move away from the traditional ways of life, obesity has become a critical health issue for which most nations are ill prepared (Routley, 2011). While examining the effect of increase in economic globalisation effects in Africa, Steyn et al. (2005) found a strong association with urbanisation in many rapidly developing countries. Rapid urbanisation,

which is a consequence of globalisation, has created an environment in which the risks of overweight and obesity increase (Kadiri, 2005; Maher, et al., 2010). There is a close link between urbanisation and the negative impact of a higher intake of fat and calories.

It is expected that urbanisation will increase over the next two decades (Misra & Khurana, 2008). According to Puoane, Bradley, and Hughes (2005), rural dwellers relocating to cities benefit from opportunities related to occupation and improved quality of life. Several changes in employment and food production happen in rural areas when economic globalisation occurs; for example, less farming is undertaken, and rural living becomes less affordable (Chopra & Darnton-Hill, 2006). Although the move to urbanisation can bring economic advantages, social advantages, and certainty in developing countries, many of those who drift from rural to urban areas suffer consequential revenue inequalities (Chopra & Darnton-Hill, 2006).

Costa-i-Font, et al. (2013) identified revenue disparities and less family income, encourages females joining the workforce to meet the demands of household expenses. This move means they have less time to devote to preparing food and going to the markets to buy fresh food (nutrients) on a regular basis. This important household shopping behaviour has changed due to women's increased representation in the workforce. Also, along with an increase in the female labour force comes an associated rapid rise in the risk of childhood obesity. Costa-i-Font and colleagues' findings highlighted that when a female has a work routine, the use of fast-food takeaways increases and results in a concomitant increase in obesity, especially for working-class families (Costa-i-Font, et al., 2013). Females working in cities

devote less time to cooking meals and raising families and have a higher dependency on precooked or fast foods (Nugent, 2008; Stiglitz & Charlton, 2005).

A literature review conducted by Costa-i-Font, et al. (2013) has shown rapid growth in urbanisation and its association with an increase in sedentary lifestyles and the availability of processed food options. Bleich, Cutler, Murray, and Adams (2008) showed a strong positive association between urbanisation and obesity in advanced economies and stated that urban migration frequently encourages extreme modifications in nutrition and physical activity levels (Popkin, 1998; World Health Organization, 2010a). Also, people living in metropolitan areas often eat food that is entirely different from food eaten by individuals residing in the rural areas of a developing country (Popkin, et al., 2012). In such rural areas, many people grow and eat traditional staple diets, which are low in fat and calories (Bleich, et al., 2008; Caballero, 2005). In developing countries, urban populations have increased accessibility to imported 'Westernised' diet alternatives (Puoane, et al., 2005), which are advertised through a range of multimedia sources (Kruger, Puoane, Senekal, & van der Merwe, 2005). These foodstuffs are regularly accessible at subsidised, inexpensive prices, making them a viable economic alternative to low-priced vegetables, with the result that more people eat fast foods instead of traditional staples (Misra & Khurana, 2008; Stiglitz & Charlton, 2005).

The World Health Organization (2010c) states that a revitalisation of a healthy settings approach cannot be achieved by the health sector alone. It needs a multi-sectoral approach with adequate planning and support. This

means that other sectors, such as those dealing with rural and urban planning, finance, women and children's affairs, and the environment, must all collaborate for a significant improvement in health indicators.

Another factor affecting obesity is that people migrating from rural to urban are faced with having small, overcrowded living spaces, which decreases physical activity. Rural to urban migration increases the chances of poor quality housing structures, insecure tenure, poor access to water, lack of sanitation facilities, and insufficient living areas (Krause, 2011). Rashid (2009) conducted a community interventional study using secondary and ethnographic data from Bangladesh, where female garment workers were able to purchase low-cost housing constructed by the government and non-government organisations (NGOs). This approach has been very successful in urban centres: it has made an enormous impact on the population and has reduced NCDs in the city by facilitating a better standard of living. In the Pacific region, healthy living in the cities and the villages has long been the norm and taken for granted. However, the rapid increase in urbanisation means that those healthy settings have not been sustainable (World Health Organization, 2010c).

A cross-sectional study conducted by Popkin, et al. (2012) examined the urban food environment. The findings indicate that urban centres, with multinational supermarkets and a variety of fast-food chains, offer a ready supply of processed foods – which are high in calories, sweets, and increased sugary foods. There are fewer traditional markets and less farm-fresh produce. Munoz-Plaza et al. (2013) conducted qualitative study' of 30 older adults in urban areas identified that participants had recognised the

multilayered lifestyle; for example, 80% of participants reported eating only one daily meal at home because healthy foods were more expensive. In this study, only 20% of participants experienced high levels of food security. Participants noted they faced numerous challenges when navigating their local environments to acquire food; further, they were dissatisfied with the price and quality of foods at the local markets and as a result they shopped at food stores farther away.

There are inequalities in the obesity rates between males and females; however, socioeconomic status and urban lifestyle do not sufficiently explain these differences. Abdulai (2010) contends that a certain level of growth, where wealth regulates access to nutrition and physical activity, plays a part. This study employed a unique dataset to examine the influence of individual and household characteristics on the overweight and obesity of women and children in urban Accra, Ghana. The data reveal that around 36% of women had a BMI greater than 25, while 13% showed a BMI greater than 30. Such information lends support to the growing concern that obesity is an emerging problem among adults in many large urban areas in developing countries, in addition to Fiji.

In urban Ghana, the empirical examination of the determinants of overweight and obesity suggests a significant role for urban public policy in influencing such problems, especially since micro community interventions cannot produce the changes that policy decisions can. Consistent with previous research, Abdulai (2010) study shows that a mother's work status significantly affects her BMI and the probability of her being overweight. For example, women who were engaged in farm, garden, market, or street work

were found to be much less likely to be overweight than those who were unemployed and stayed at home. This finding suggests that working women, who typically commute to work, probably engage in work-related physical activity and were less likely to be overweight or obese (Abdulai, 2010).

Commuting to work and engaging in work-related physical activity require the expenditure of large amounts of energy, the energy that contributes to a reduction in weight gain. The impact of urbanisation on obesity has also been well researched globally; however, more research appears to be needed to understand the factors that increase obesity in particular areas, such as in rural areas of Fiji. This is important, because the increase in rural to urban drift, and vice versa, results in greater consumption of processed food, even though rural villagers sell fresh produce in the urban markets. This topic will be explored further in the Literature Review chapter.

2.8 SEDENTARY BEHAVIOUR AND OCCUPATION: IMPACT ON OBESITY

Sedentary behaviour and occupation are independent risk factors for obesity and other related health issues. The term *sedentary behaviour* describes a distinct class of activities that require low levels of energy expenditure in the range of 1.0–1.5 METs (multiples of the basal metabolic rate) and includes ‘sitting during commuting, in the workplace and the domestic environment, and during leisure’ (Thorp, et al., 2011). Jans, Proper, and Hildebrandt (2007) examined how many hours a day Dutch workers spend sitting down, and what proportion of this time was work-related. The authors found the employees were sitting for seven hours per day, with employees involved in computer activities having the highest work-related

sedentary behaviour share (45%), while the lowest sitting hours were among the service workers. Freak-Poli, Cumpston, Peeters, and Clemes (2013) confirmed these findings, stating that the greater potential for sedentary jobs to negatively impact on the behaviour of workers is in such occupational settings. Interestingly, occupational health programme interventions have shown an improvement in the leading worldwide risk factors for NCDs, and these have also demonstrated advantages to the employer.

The nature of occupations may also have an impact on the prevalence of obesity in Fiji. Employees in urban occupations are frequently more inactive than employees in rural occupations, prominently due to decreased physical activity during working hours (Misra & Khurana, 2008; World Health Organization, 2010a). Worldwide, Popkin (1998) found there was a shift to more deskbound work, even for individuals working in agriculture, industry, and services, with similarities in the types of work in numerous occupations. Adults spend a considerable part of their day working, so how they work has a strong effect on their complete daily energy disbursement. This is crucial in relation to being overweight and obese (Allman-Farinelli, Chey, Merom, & Bauman, 2010).

As well as reduced occupational activity, there is an increase in the use of transportation to and from work and leisure activities, an increase in the use of labour-saving technology at home, and a tendency towards inactive leisure time (Popkin & Doak, 1998). The availability and affordability of televisions and computers substitute for more active leisure undertakings, particularly in situations where the outdoor environment is considered unsafe (Popkin, et al., 2012). This all leads to less physical activity and the

promotion of a sedentary lifestyle. As new technologies infiltrate Fiji's rural islands, employment tends to become less physically challenging (Misra & Khurana, 2008). Findings from studies in Cameroon showed obesity in males increased by 29.8% and in females by 32.9% as occupations became more professional (and more inactive). However, in direct contrast to the above, physically challenging jobs are stated to reduce the prevalence of obesity (Fezeu et al., 2006).

In an Australian study looking at employees, a resilient relationship was identified between 'occupational sitting time' and obesity (Mummery, Schofield, Steele, Eakin, & Brown, 2005). Similarly to leisure-time activity, adequate energy disbursement is often not balanced with an inactive profession and can result in an associated obesity (Allman-Farinelli, et al., 2010). Both studies have several limitations, the most obvious being the cross-sectional analytical design describing the associations, but not the interconnections. In addition, the data were obtained by self-reporting. In such cases, it is known that subjects tend to underestimate their weight and overestimate their height so the BMI values may be higher than calculated. Whether this difficulty occurs in an occupational group or not cannot be distinguished. Nevertheless, the questions concerning these studies were demonstrated to have good validity and reproducibility. An assessment of sedentary behaviours at work and at home was not included in the health survey, nor were any direct measures of occupational physical activity obtained. Such information might be relevant to explain further the differences between occupations and any inter individual variations within the occupations. Also, the study lacked a complete assessment of dietary intake

(Allman-Farinelli, et al., 2010) and this assessment should be undertaken to accurately identify the determinants of overweight and obesity.

Additionally, the movement of the Fiji workforce into occupations with higher salaries and better employment conditions does not always signify a tendency to obesity. This finding is in conflict with other studies, which equate office jobs with higher rates of overweight and obesity. Moreover, attention should be given to determine which of these conditions generated the development of obesity and other related health problems. Recently a knowledge-brokering study conducted in Fiji, which focused on workplace obesity prevention approaches by the government and NGOs, developed a workplace obesity prevention policy (Waqa, Mavoa, Snowdon, Moodie, Nadakuitavuki, et al., 2013; Waqa, Mavoa, Snowdon, Moodie, Schultz, et al., 2013). This study is distinctive because it was the first to study the participants' perceptions about a knowledge-brokering approach designed to reduce obesity in a lower-middle income country in the South Pacific. The knowledge-brokering team had in-depth local knowledge and was able to identify the knowledge-brokering components that were likely to be useful in the specific context of Fiji. However, the research had some limitations. First, there were insufficient NGOs, so the participant numbers within the NGOs were too small to make a valid comparison between the NGOs and government organisations. Further, there was a lack of control over the selection of the participants, resulting in the participants having a broad range of evidence- and performance-based skills and roles. Additionally, having the research team members interview the participants had both strengths (namely, that the interviewers had reviewed all the data from each

participant before the interview) and limitations (there was the potential for bias). Given the close relationships that developed between the interview team and the participants, the participants felt able to speak freely during the engagement process and made a number of suggestions for change. The interview transcripts included negative comments, so it is clear the participants did not feel constrained in their responses. In the study conducted by Waqa and colleagues, workplace interventions rarely targeted evidence-informed policymaking structures and processes to prevent obesity and reduce NCDs, hence, there is a need for evidence-informed policies in the Pacific Islands, including Fiji, to avoid obesity in the workplace and to reduce related NCDs (Waqa, Mavoa, Snowdon, Moodie, Nadakuitavuki, et al., 2013).

In a systematic review, Thorp, et al. (2011) assessed 48 articles and reported on the association between self-reported sedentary behaviour and device-based measures of sedentary time with health-related outcomes in adults. Forty-six articles incorporated self-reported measures, including total sitting time, television viewing time only, and other screen-time behaviours and other sedentary behaviours. The review findings indicated a consistent relationship between self-reported sedentary behaviour and mortality and also weight gain from childhood through to the adult years. However, the results were inconsistent for associations with disease incidence, weight gain during adulthood, and cardio metabolic risk. Three studies used device-based measures of sedentary time with one study showing that markers of obesity could predict the sedentary time. The limitations of the review centred on the self-reporting measure of sedentary behaviour. An inherent limitation

of such measures is that they may not characterise accurately the level of exposure from sedentary behaviour causing deleterious health outcomes (Thorp, et al., 2011).

2.9 SOCIAL RELATIONSHIPS: IMPACT ON OBESITY

The lack of social relationships has been shown to influence mental and physical health (Seeman, 2009). The advantages of social relationships can be emotional (intimacy, sense of belonging, comfort), instrumental (guidance, advice, physical assistance), and material (money, goods, other resources) (Kana'Iaupuni, Donato, Thompson-Colon, & Stainback, 2005; Pridmore, Thomas, Havemann, Sapag, & Wood, 2007). Further, social integration reduces mortality and disability (Kana'Iaupuni, et al., 2005), elicits faster recovery rates from illness, and offers some protection against mental illness (Seeman, 2009). Social relationships and health have been explored using social network studies, as well as qualitative concepts such as social support and social wealth (Seeman, 2009). Social relationships are affected by stress, which can sometimes lead to binge eating (Zhao et al., 2011). An extensive study, undertaken in the United States from 1999 to 2008, demonstrated that a high prevalence of stress-related eating contributed to the rapid increase of obesity. In this study, 72.3% of adult males and 64.1% of adult females were overweight or obese (Flegal, et al., 2010). Similarly, Zhao, et al. (2011) found that in the United States of America, there was a link between stress and appetising, or comfort diet intake. Further, the perceived stress was identified as being related to a significantly lower intake of healthy nutrition because of increased consumption of highly appetising fatty foods.

Another study conducted by Zhao and colleagues (2011) into the implications of obesity in an adult population focused predominantly on physical health effects. Negative social consequences of obesity have primarily been studied in younger populations. Obesity can have a significant negative impact on people's social lives. While individuals who are overweight might be able to adapt, socially and personally, it is likely that they would still suffer, to some extent, in these domains, as a result of their weight. The discouragement felt when mingling in society might cause overweight people to become more introverted than previously, and contribute to further weight gain (Zhao, et al., 2011).

Cohen and Sherman (2014) argue that it is important to learn about the effective ways to protect overweight individuals from negative social and psychological impacts, in addition to examining ways to induce weight loss. Consequently, protective interventions might be most efficient if they are aimed at overweight individuals. Today, 'anti-fat' attitudes are prevalent in society, which can lead to discrimination and stigmatisation of overweight and obese people. For this reason, protective interventions might be most effective when they are aimed at the society that judges and treats individuals poorly. Thomas (2012) further suggests, a wider, societal attitude change may reduce the social pressure on those who are hesitant to participate in social activities due to weight.

A systematic review conducted by Ali, Amialchuk, and Rizzo (2012), into the relationship between social factors and weight issues has yielded mixed results. Several studies have concluded that those who are obese experience certain social consequences. For example, when compared to

their non-obese counterparts, obese individuals have fewer friends and are seen as less popular. Hong and Espelage (2012) examined self-reports by obese females and identified that they go on fewer dates and participate less in school functions and groups. Massiera, Petracovschi, and Jessica (2013) found that being obese stopped college students from getting involved in other social spheres, including party attendance and establishing close friendships.

Some studies have categorised ‘overweight’ and ‘obese’ individuals separately because these individuals have different social experiences (Katz, 2014). One study, focusing on 15-year-old males, found that, when compared to their normal-weight peers, the obese males experienced more negative social factors (Midei & Matthews, 2011). However, on many of these factors obese children differed significantly from children who were overweight. For example: obese male children were found to be less satisfied with their weight, look, and school; had fewer friends; missed school more often; were bullied more often by their classmates; used drugs more often; and had greater suicidal tendencies (Epperson et al., 2014). Indeed, many negative social consequences were linked to obesity. However, few of these studies focused on obese adults.

Despite the evidence demonstrating the social consequences of obesity, a significant relationship between these psychosocial factors and weight has been found. Some studies, for example Ali, Amialchuk, and Pentina (2013), found that popularity is not negatively affected by being obese, suggesting that obese individuals do not necessarily have restricted networks of social relationships. In one study of middle-aged women, the

self-report measures of social avoidance, social self-esteem, social competence, membership of social networks, and the amount of social support received did not differ significantly between obese and non-obese women (Al-Eisa et al., 2013). Ratings on these social factors by friends (selected by participants) of obese and non-obese women also did not differ significantly. However, the authors posited that a number of potential limitations of the study could have led to these findings. These limitations included the relatively low power of the study, the non-random selection of the participants, the participant's friend was not weighed, and the subjects had personally selected their friend. In addition, it is possible that a social desirability bias occurred in the responses of the friends.

Further, according to Johnson (2013), lack of societal acceptance is likely to cause overweight and obese individuals to apply negative views to their self-concepts. This idea is supported by findings that show levels of self-acceptance do not differ between those with a BMI between 25 and 35 (overweight and obese, respectively) and those with a BMI of less than 25 (normal weight). In addition, those with a BMI of 35 and above (severely obese) have poorer self-acceptance than those who are at a 'normal weight' level.

Similarly, Miller (2013) and Jordan (2011) found that BMI was not significantly associated with social support, social strain, and social skills; however, there was limited variance in the BMI, which could have led to an inability to detect actual associations between these factors and BMI. For example, 'Obesity' was not broken into separate categories, and only obese individuals (with a BMI of 30 or more) were included in the study (Jordan,

2011). Comparisons of the obese people with general population samples showed only minor differences in the levels of social support and the subcategories of social skills, with no difference in overall social skills (Miller, 2013). The obese sample actually reported a lower level of 'fear of social contact' than the general population sample; such findings may reflect a sample bias (Miller, 2013). Currie et al. (2012) believed that obese individuals without difficulties in social relationships might have been more likely and more willing to participate in the study. Cohen (2013) suggested the lower level of fear of social contact by the obese participants may have resulted from a social response bias in which the obese participants did not admit social skills problems, to either the researcher or themselves, and overcompensated in the opposite direction.

Currie, et al. (2012, p. 41) noted that 'the majority of research suggesting that associations exist between being overweight and obesity have many different negative psychosocial consequences'. However, the majority of research found did not focus exclusively on adults; many of the findings were based on school-aged participants. Research about younger participants' obesity and overweight has guided the predicted links between overweight and negative social consequences. Further, an important consideration is that adult populations might differ from their younger counterparts in ways that affect this relationship. As a result, it is clear the association between the socio-cultural factors and obesity needs to be investigated with an adult population. In a practical sense, the relationship between obesity and social participation is important because social

participation is an important factor in the life of healthy adults (Legh-Jones & Moore, 2012).

A study conducted in United States of America by Brison (2007) identified that social support is a significant factor in providing healthy nutrition, physical activity behaviours, and having a healthy weight. In contrast, smaller levels of social support may be tied to larger calorie intake and obesity (Hall, Thomsen, Henriksen, & Lohse, 2011; Renzaho, 2004). In the absence of emotional support, food consumption may be triggered as a comfort mechanism, because according to Kruger, et al. (2005) it has physiological roots. Christakis and Fowler (2007) suggest obesity is spread widely within social ties, and may be a result of peer stabilisation. Further, social support acts as a safeguard against the physiological effects of stress and moderates stress-related obesity risks (Vicennati, Pasqui, Cavazza, Pagotto, & Pasquali, 2009).

Carroll (2013) stated that a fundamental aspect of successful adult socialisation is for a person to be actively and productively engaged in society. It is important to determine how and why obesity is an obstruction to this engagement. Overall, social participation has been shown to benefit people's lives, regardless of age, in a number of ways, such as the decreased likelihood of mortality (Zimmer, Martin, Jones, & Nagin, 2014) improved psychological wellbeing (Overman et al., 2013), and better physical and mental health (Whaley, Smith, & Hancock, 2011). These benefits can help offset many negative factors associated with obesity, so it is important to investigate whether obesity, or being overweight, is associated with decreased social relationships.

2.10 ENVIRONMENTAL INFLUENCE ON NUTRITIONAL INTAKE AND PHYSICAL ACTIVITY: IMPACT ON OBESITY

The spaces in which individuals live, work, play, and eat (referred to here as the 'environment') are strongly associated with nutritional intake and physical activity (Caballero, 2005). Worldwide, it appears that nutrition interconnects with local environmental factors and increases the prevalence of obesity among people (Swinburn, Millar, et al., 2011). The association between the environmental and individual factors includes genetic makeup and reveals variations in body size among individuals. In low-income nations, obesity predominantly affects middle-aged adults (especially women) from wealthy, urban environments; however, in high-income nations, it affects both sexes of all ages, with obesity being overrepresented in the disadvantaged groups (Swinburn, Millar, et al., 2011).

Reliable evidence from Fiji and research from other developing countries has shown that environments in Fiji, particularly in city regions, are associated with increases in rates of obesity (Tagoe & Dake, 2011). Swinburn, Millar, et al. (2011) identified leading causes of the global obesity epidemic as environmental factors; these factors have altered significantly throughout the past 40 years (corresponding to the increase in the epidemic), have become global in nature (affecting virtually all nations with empowering economic situations), and are quickly transmissible (in view of the near-concurrent nature of the epidemic through nations). Certain environmental determinants of obesity, such as the built environment, can have substantial consequences on behaviours (Frank, Andresen, & Schmid, 2004). Moreover, environments have been transformed concurrently and universally to develop additional obesogenic features throughout the past few decades. These

factors significantly contribute to an environment where weight gain is being encouraged through various lifestyle choices.

Key drivers of the global obesity epidemic have been identified and placed within a framework (found in Appendix A) to help understand population-level obesity determinants and solutions (Swinburn, Millar, et al., 2011). Butland, Britain, and Britain (2007) contend that the levels of obesity determinants are recognised by the physiology of energy balance, which, in turn, is determined by behaviours and environments. The environment embraces a wide range of cultural, social, and infrastructural conditions, which influence an individual's ability to adopt a healthy lifestyle (Butland, et al., 2007). For example, environmental factors may shape the availability and consumption of different foods or the levels of activity undertaken by people, who have limited choices. In developed countries, environmental factors leading to obesity have been well researched; however, no study has been conducted in rural environments in the Pacific region. A study carried out in United States of America by Trowbridge and Schmid (2013) suggests that environments are related to obesity and, thus, the risk factors of NCDs are complex. Recently, a new approach has been used by researchers, namely, a quasi-experimental application and a translation of research into evidence-based practice: this will change how the community builds environments and how this can lead to a prevention of obesity at the population level (Trowbridge & Schmid, 2013).

The population trajectory of obesity prevalence is fundamentally likely to differ between an intervention aimed at motivating behavioural changes (e.g. health promotion programmes, social marketing, and education) and policy

interventions (in this context meaning enforceable actions, such as laws and regulations) when the environmental drivers are reversed (e.g. reducing the cost of healthy foods and increasing the costs of unhealthy foods). Sanigorski, Bell, Kremer, Cuttler, and Swinburn (2008) argued that interventions to motivate behavioural changes could be regarded as counteractions, because they counteract drivers of increasingly obesogenic environments by acting on some mediators. Interventions to motivate behavioural changes may have significant obesity prevention effects, especially in children, when applied to a whole community. Sustainability and affordability are two principal and continuous challenges for all programmes, even those with proven effectiveness (de Silva-Sanigorski et al., 2010). Belon, Nieuwendyk, Vallianatos, and Nykiforuk (2016) mentioned that social environments need to be considered to explore people's behaviours and values in a community. Belon and colleagues believed that food is an intersection between culture and ecology, and it influences how people live in a specific environment (Belon, et al., 2016).

An interventional study was undertaken in Fiji by Waqa, Moodie, et al. (2013) using faith-based organisations and schools to increase physical activity and promote healthy eating environments through community engagement. In the design of the strategies and programs, cultural and social factors were seen as influencing health behaviours and affecting specific groups. One of the best mechanisms for intervening was determined to be capacity building. The challenge for health promotion programs such as these is to understand how to accommodate an essentially bottom-up community capacity–building approach, within a school system that is

conventionally managed top-down. Issues associated with these two diverse styles of programming need to be clearly thought through at the programme's outset. They need to be viewed as parallel, complementary tracks rather than as programmes that compete and create tension. Although schools may seem to be a relatively easy setting in which to target adolescents, multiple issues can arise when working in this setting. For example, in this study, despite strong collaboration and good working relationships with the schools, the researchers experienced multiple challenges with implementing different components of the project, such as a healthy eating environment in the school's canteen. These changes to the environment resulted in a decrease in the profits of the school management; consequently, they withdrew from the study. The study design was deemed not suitable for the Fiji islands, because Fiji has a very strong cultural and parental influence in the community and to build a strong community environment there needs to be strong, cohesive community engagement. Such engagement is not manageable in the urban areas of Fiji due to the diversity of cultures and ethnicity; in contrast, rural Fiji has a strong sense of community engagement.

2.11 GENDER RELATED CULTURAL PERCEPTIONS OF BODY IMAGE: IMPACT ON OBESITY

Body image has been gathering attention within the health sciences and, more recently, within the psychological sciences (Frederick, Hadji-Michael, Furnham, & Swami, 2010). Some ethnic groups have different perceptions of body image, which relates to their social identity. A study conducted by Swami et al. (2010) in 10 different countries has found that there are differences in body dissatisfaction levels between females and males. In the United States of America, females experienced greater body

satisfaction than females in other nations. However, the study had limitations as it did not gather data on the participants' ethnicity, which may be an important oversight given the possible impact of ethnic perception on body image.

Socio-cultural factors have a significant impact on individuals' and cultural communities' perceptions of body image. Customarily, in Micronesian and Polynesian communities, big body size pertains to high social status quo, sovereignty, and dominance. Big body size is mostly associated with sexual attractiveness, health, and highly spiritually connected individuals (Pollock, 1995). Fattening rituals are commonly experienced where males and females from prestigious, ranked families were given highly sought food for a relative timeframe purposely to become obese (Parks, Zemel, Moore, & Berkowitz, 2014). This has an impact on the body's fat storage mechanism and people perceptions about obesity. Even though in some communities the fattening ritual practices may have ended, big body size remains a functional perception in Pacific communities. Nevertheless, a shift in the perception of big body size is evident and linked with contemporary slim body size in modernising communities.

An important subject, which is often ignored when contemplating obesity in the Pacific context, is the cultural perceptions surrounding body image (World Health Organization, 2010a). Obesity is perceived differently across cultures; seeing it as a disease is a Western phenomenon (Puoane, et al., 2005; Renzaho, 2004). Further, obesity has traditionally been connected with wealth, health, and happiness. From this perspective, it makes sense that being ample, or overweight, symbolises privilege and

dominance (Renzaho, 2004). Mavoa and McCabe (2008) contend that cultural body image preferences can moderate the drivers; for example, increasing access to food has a greater influence on Tongan women, where a larger body size is a positive characteristic, than on Japanese women, where a smaller body size is considered perfect (Kagawa et al., 2007; Swinburn, Sacks, et al., 2011).

Research was conducted by Brewis, McGarvey, Jones, and Swinburn (1998) and Craig, Swinburn, Matenga-Smith, Matangi, and Vaughn (1996) among Fijians, Cook Islanders, and Samoans. The lusty Western lifestyle impact on the slim body size has pertained to body dissatisfaction and attempts at weight loss by Pacific communities. The attempt to attain slimness is seen as a beneficial change towards healthy body weight; however, this has major cultural implications such as communities' internal perceptions of ideal body size may be discouraging (Brewis, et al., 1998). A qualitative study by McCabe et al. (2011) examined body image among 24 Tongan, Fijian, and Australian adolescent males in relation to socio–cultural perspectives. The study findings showed that Tongan and Fijian boys wanted to look big and strong so they could play sport, do hard labouring work, and look attractive to females. Australian boys were satisfied with their height and other aspects of their bodies. There were a number of limitations to this study, the first being the small sample size; hence, the results cannot be generalised to adolescents within these cultural groups until they are confirmed by research with a larger sample size that includes adolescents from a broader geographic area, including those from rural areas in each nation. Further, it is vital to categorise how other themes may influence the

body image of adolescent males from these diverse cultural groups and to identify the ways in which this information relates to shaping body image and its influence on the body-changing strategies of these males. It is quite likely that these cultural norms could serve as a catalyst to increase obesity and, at the same time, be a barrier to accomplishing the goals of health intervention programmes (Mavoa & McCabe, 2008).

In Fiji, big body size also linked with social ranking and respect, particularly among iTaukei communities. These ideas, linked with traditional values, highlight big body size and demand a big appetite. Other factors are also identified with big body size in the Fiji islands. Gregg (2000) and Becker (2004) argued that large hips for females pertained to greater child bearing, while big leg and calf muscles were perceived as a female's ability to work hard, look after the extended family, and not been lazy.

However, Fijian values are changing due to social transition. Becker (2004) illustrated that iTaukei females are vulnerable to social changes (i.e. modern technology) and, profoundly, are giving more emphasis to their weight and body size, are purging to control body weight and are strongly dispraised for their weight. A study by Wate, et al. (2013) highlights young adult iTaukei females engaged in weight loss, modelling themselves in public arena due to their Westernised use of social media technology, thus exposing vulnerable females to eating disorders. Serval body size images cause concern, which is also highlighted by young and older females in Fiji and has a strong association to acculturation (Swinburn, Millar, et al., 2011). McCabe, et al. (2011) and Ricciardelli et al. (2007) found in the OPIC study that obese people were unhappy with their body size and were trying to

achieve and maintain an optimal, attractive weight, which often made them lose weight. The authors of the OPIC study suggest that muscularity was a main theme and approaches to accomplish muscularity embrace eating more or less, consuming healthy foods, and different types of physical activities, such as going to the gymnasium among adult males. However, women's perceptions of body image in the OPIC study suggest that those who were obese or underweight were likely to be unhappy with their body image and raised concerns about putting on weight or wishing to reduce weight (McCabe, Waqa, Dev, Cama, & Swinburn, 2013; Ricciardelli, et al., 2007; Swinburn, Millar, et al., 2011; Wate, et al., 2013). As in any society, in Fiji food types are accorded different gender status. McCabe, et al. (2013) reported seniority and gender often intersect to determine status, which is then reflected in eating patterns. For example, older Fijian men receive the most prestigious food, and in greater quantities, than younger males, females, and children. However, Wate, et al. (2013) report that almost 9% of elderly Fijians missed their evening meal because of rank and status in the household. Further, the gender differences in obesity reflect the relative status of males and females in Fiji, with an energy imbalance being created by differential patterns of eating, and household and recreational activities. As the 'food of Westernised people' enhances the status and becomes more accessible, this system of symbolism is accelerating the nutrition transition and the prevalence of obesity across all Pacific Islands, including the Fiji islands.

2.12 PREVALENCE AND IMPACT OF OBESITY IN FIJI

The prevalence of overweight and obesity is increasing in Fiji across all age groups (Cornelius et al., 2002; Gyaneshwar et al., 2016). The 2011 National NCD STEPS Survey (brief report) reported that 32% of Fiji's population aged 25 to 64 years were overweight or obese (Gyaneshwar, et al., 2016). The NCD STEPS Survey conducted in 2002 (detailed report) stated that 29% of Fiji's population aged 25 to 64 years were overweight and 18% were obese, with iTaukei Fijians (31% overweight, 11% obese) having a higher prevalence than Fijians of Indian decent (21% overweight, 6% obese). Findings from the survey stated that more women (26.4%) were obese compared to men (9.8%)[7] (Cornelius, et al., 2002). From the surveys in 2002 and 2011, an 8.5% increase in the prevalence of obesity among Fijians was reported.

The alarming data available show that Fiji was experiencing an increasing prevalence of overweight and obesity between 1993 and 2004, with a continuous rise of obesity over the years, as illustrated in Figure 2.3. The data for 1993 and 2004 were retrieved from the Fiji Ministry of Health. While the prevalence of overweight and obesity was mostly stable in 1993 and 2004 from 0 to 17 years, there was a steep rise in the obesity trend from 15% in the 15 to 17 years age group to approximately 47% in the 18 to 24 years age group (Ministry of Health, 2014). This drastic increase in prevalence across all ages indicates that obesity is a major issue in Fiji. It is,

[7] For 15 to 64 years, the Fiji National NCD STEPS Survey used WHO BMI cut-offs, where BMI <25kg/m² is considered normal, BMI ≥25 kg/m² to 29.9 kg/m² is overweight, and BMI >29.9 is obese.

therefore, critical to target communities for obesity health promotion intervention programmes across the Fiji islands.

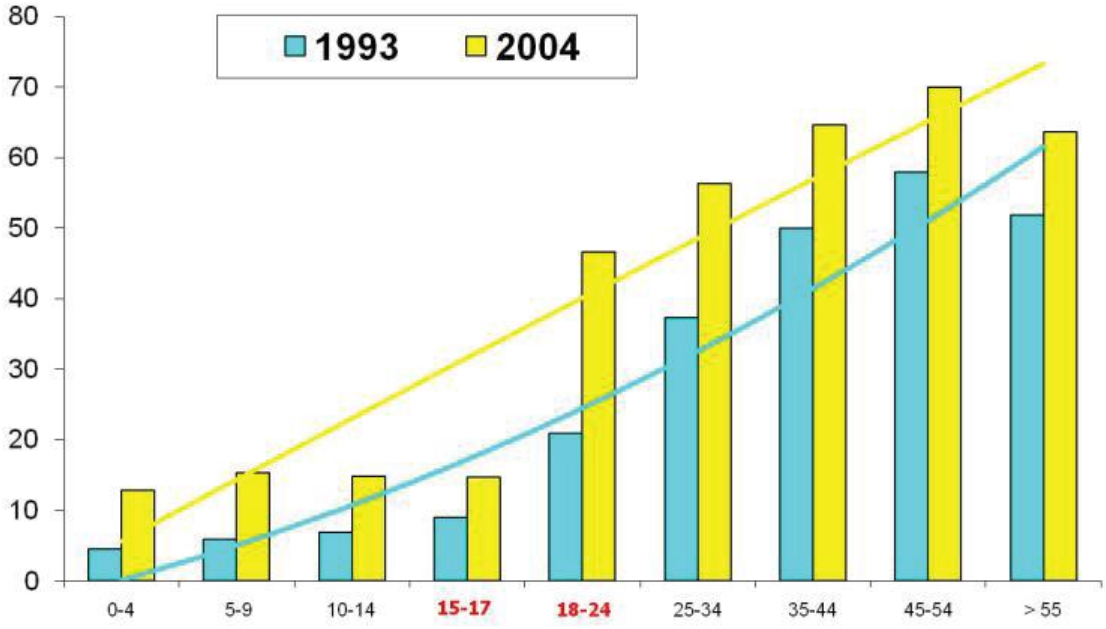

Figure 2-3. Prevalence of overweight and obesity in Fiji. Age in years. Source: Fiji Ministry of Health (2014).

NCDs are a growing concern for both Indigenous Fijians and Fijian Indians. According to the World Health Organization (2016), NCDs contributed to 77% of all deaths in 2008. The findings of the NCD STEPS Survey 2002 indicate a prevalence of 19.1% for high blood pressure of and 16% for diabetes in the 25 to 64 years age group (Cornelius, et al., 2002). Although the prevalence of high blood pressure was increased among Indigenous Fijians, diabetes increased among Fijian Indians. Obesity is not a problem limited only to young adults in Fiji. The prevalence of overweight and obesity among all adults was also found to be a problem, including in rural Indigenous communities.[8] Schultz, et al. (2007) conducted a cross-sectional

[8] For ≥18 years, the Fiji NNS used WHO BMI cut-offs where <18.5 kg/m² is considered underweight, 18.5 kg/m²–24.9 kg/m² is considered normal/healthy weight, and BMI <25 kg/m² is considered overweight, while the National Centre for Health Statistics

survey, and findings indicated that 14.9% in the 10 to 14 years age group and 14.7% in the 15 to 17 years age group were overweight or obese. Approximately 15% and 18.2% of Indigenous Fijians identified as overweight or obese compared to Fijian Indians at 13.8% and 7.6%, respectively. According to Schultz and colleagues, findings indicate that overweight and obesity had more than tripled both ethnic communities since the previous findings in 1993 (Schultz, et al., 2007). Khan, Cigljarevic, Schultz, and Dyer (2006) conducted another study, which indicated that 18% of young adults were overweight and 16% were obese, with an increased trend in Indigenous Fijians and among women. There are, therefore, considerable and increasing concerns for young adults in Fiji who are overweight or obese, with higher prevalence seen in Indigenous Fijians compared to Fijian Indians and in women compared to men. However, to date no study has been conducted in the rural areas of Fiji to indicate the prevalence of overweight and obesity in Indigenous communities.

2.13 NUTRITIONAL CHOICES IN FIJI

Pacific Island nations, including Fiji, are currently going through demographic and epidemiological changes, which are causing major changes in dietary habits, so-called nutrition transition. The nutrition transition pertains to a sequence of substantial shifts in dietary supply and food patterns over time, with a consistent rise of NCDs (Popkin, et al., 2012).

(NCHS) standards were used as benchmarks where <80% is underweight, 80% to <120% is healthy, and ≥120% is overweight for weight for age and for children and adolescents under 18 years. NCHS standards are reported as a percentage of the NCHS median (Schultz, Vatucawaqa, & Tuivaga, 2007).

The written history of food intake patterns in Fiji dates back to as early as 1850, when the missionaries arrived in Fiji and before other ethnic communities migrated to the Pacific Islands. The frequent staple diet consumed was locally sourced root crops such as taro or *dalo*, cassava, yams or *kawai*, breadfruit or *uto* and plantain or *vudi*. These are regularly consumed with a paucity of green leafy vegetables such as *bele*, *dalo* (taro) leaves or *rourou*, and ferns or *ota* (Jansen, Parkinson, & Robertson, 1990). The type of protein was different by geographic; for example, rural communities tended to eat prawns, fish and eels, flying foxes, rats, and some insects. However, communities located near the coastline consumed more saltwater fish and shellfish for their protein diet (Jansen, et al., 1990). Natural fruit trees were ample and citrus and other fruits and bananas were available. Fruit intake was as a snack food and was never considered an essential part of a diet, as vegetables were.

Drastic changes occurred in the demand for nutrition in Fiji in the 19th century, during the British colonisation and settlement, and the introduction of the Westernised diet such as sugar and flour. There was also a major change to Indigenous Fijians' food in 1879 with the settlement of indentured Indian labourers to work on sugar cane (Schultz, 2009). Foods such as dried-out legumes and rice were brought into Fiji and as they became more readily available, this nutrition was integrated into Indigenous Fijian food, even though *dalo* and yams contain more carbohydrate, which is desirable. Schultz (2009) described the composition of the Fijian Indian foods pertaining to the quota, which was distributed to people while working on the sugarcane farms. Staple foods supplied were rice, wholemeal flour, and roti, whereas

green leafy vegetables were given by the Indigenous Fijian communities as a barter for clothes or spicy food (Jansen, et al., 1990).

Following from the findings of O'Laughlin and Holmes (1954), in 1954 indicated that cassava comprised 50% of the root crop eaten, while an individual ate 150 g of wholemeal flour and 50 g of rice per day. Fruits were less important, but leafy vegetables were a significant part of the food, whereas the intake of meat was based on individual religions. Ghee was the fat of choice utilised in cooking. The intake of vegetarian diets, sweets, and snacks was frequently associated with festive seasons.

Changes to food intake patterns are well documented for Indigenous Fijians in the Naitasiri district between 1954 and 1980 (Parkinson, 1990). Nayacakalou (1978) contended that in 1954 individuals depended upon traditional foods from their farms rather than the supermarket, and by the mid-1980s, families purchased more of their groceries from supermarkets (Ravuvu, 1988). A survey conducted in 1981 on the food production and intake of Indigenous Fijian and Fijian Indian farmers in the Sigatoka valley suggested the two ethnic communities had diverse food intake preferences. The findings indicated that the main staples for Indigenous Fijians were cassava, sweet potatoes, taro, and yams, which contributed 50% of the daily energy food intake. Other significant sources of calories in the Indigenous Fijian food were rice, fresh meat, biscuit, wheat flour and white flour, and sugar (Chandra, 1981).

In 1993, Fijians purchased 79.9% of their daily food; they still grew their own root crops, green vegetables, and fruit (Wate, et al., 2013). However, there have been marked changes in the iTaukei diet over the last two to three

decades, with a shift from a traditional diet, high in complex carbohydrates and low in fat, to a more Westernised and less nutritious diet, derived from refined sugars and fats. Mavoa and McCabe (2008) reported a 62% increase in the fat intake between 1963 and 2000. The dramatic increase in the proportion of total energy derived from cereals and sugars between 1980 and 1993 was accompanied by a concomitant reduction in the consumption of traditional foods, especially root crops and fresh green vegetables. Moreover, there has been a decrease in the consumption of traditional root crops attributed, in the main, to urbanisation, the abolition in 1962 of a regulation requiring Fijian males to produce sufficient crops for their families, an increase in the export of *dalo* (taro), and the substitution of root crops with cereals.

Currently, in Fiji, prestigious or high-status foods include yams and pork. Root crops are highly valued throughout the Pacific as a protein, which is produced in large quantities for ceremonial occasions (Mavoa et al., 2012). iTaukei communities walk through on communal practices where families are the centre of all everyday activities, including food preparation and eating in an extended family home. Elaborating further from section 2.12, the traditional iTaukei culture has several roles of dietary production, which are allocated based on sex and seniority. Young boys are required to help their father or grandfather and develop skills and knowledge about dietary production and young girls are expected to observe their mothers and grandmothers and learn skills to do with what women are expected to do. Men are taught to be strong and masculine because they are expected to do difficult physical work, which requires strength to fulfil the needs of the family.

For example, it was compulsory for men to go hunting and do work on the family plantation, while women would do light duties, which required less physical activity, including caring for children and food preparation (food gathering and cooking) around the family farm or gathering leafy vegetables from the nearby bushland or collecting mussels from local rivers. However, many of the jobs for women pertained to household activities, but men, for instance, prepared large meals for family gatherings (e.g., *lovo* or food prepared under the ground) and ensured there was enough food available in case of unexpected visitors.

Food was always shared by females, to ensure everyone in the family had adequate according to their rank status in the house (sex and seniority). The only exception was during village feasts when men got involved in dividing huge amounts of food, which were prepared, uncooked, or live (for pigs, chickens, and cows), known as *mangiti*. On special occasions, prestigious staples or high-status foods included yams and pork, highly valued as a protein, which was produced in large quantities for ceremonial feasting occasions (Mavoa, et al., 2012).

While such dietary practices are still obvious in iTaukei communities, in the last two decades cheap imported nutrition has become easily accessible and, in some instances, is more in demand in many Pacific Island nations, including Fiji (Wate, et al., 2013). Coyne, Hughes, and Langi (2000) mentioned that mutton flaps, tinned corned beef, flour-based foods, sweets (including sugar), and highly sweetened drinks and salty snacks became more easily and cheaply available.

The availability and distribution of nutrition in iTaukei culture are determined by the rank and status of a person, pertaining to gender, seniority, and life stage. As discussed in section 2.12, elderly men tend to eat more highly valued foods in greater quantities than do women of their age, and young adults (Utter et al., 2008). Life stages define the type and amount food intake for a person in the society (McCabe, et al., 2013). For instance, females are given a diet that is more prestigious during pregnancy and breastfeeding stages. Such inequalities in dietary accessibility and distribution of nutrition according to gender and life stage are significant aspects of the food practices of iTaukei communities.

No doubt, diverse cultural dietary practices have been protected against change; however, the influence of social changes due to economic globalisation has brought adverse effects to Fiji. These include changed dietary food practices, especially among iTaukei in rural communities, who have been influenced by environmental changes such as food patterns.

2.14 PHYSICAL INACTIVITY IN FIJI

The reduction in physical activity levels, is associated with nutrition imbalance and weight gain, has been widely studied (World Health Organization, 2010a). In 2010, the World Health Organization (2010a) reported that 60% of the world's population did not undertake the suggested level of physical activity to achieve health benefits. Rates of physical inactivity have been identified as varying significantly in developing nations, from 17 to 91% (Oldridge, 2008). Additionally, the fast growth of nutritional transition has seen a reduction in physical activity levels and hours of relaxation, as well as a rise in the levels of stress (Tagoe & Dake, 2011).

Nevertheless, physical inactivity is associated with increasing urbanisation, as is the introduction of technologies that create work resulting in more inactive physical activity (Abubakari et al., 2008; BeLue et al., 2009; Kruger, et al., 2005). Mavoa and McCabe (2008) contend that locality also influences the type and frequency of Fijians' physical activities. Further, urban-dwelling iTaukei adults engaged in less frequent and less strenuous activities than did their rural counterparts. However, according to Mavoa, et al. (2012), more urban-dwelling adult males (43.9%) did regular 'physical activity' for fitness and health than did rural-dwellers (36.4%).

A 2004 pilot study of adolescent physical activity was conducted with three Fijian secondary schools. The findings show that 98% of students had one or more 35-minute period of physical education each week, and 60% of students engaged in some form of vigorous activity (Dewes, 2010). This is significantly less than the ideal recommended by WHO and appears to show that Fiji, along with other developing countries, is exceptionally vulnerable to increasing obesity rates, with the limited levels of physical activity, the high prevalence of obesity among the poor, and the rapid introduction of calorie-dense and increasingly cheap imported food (Caballero, 2005; Tuei, Maiyoh, & Ha, 2010; Walker, Walker, & Segal, 2004)

The impact of hierarchical structures and status variables on patterns of eating, physical activity, and body size for Fijians remains a paramount consideration for future studies at the level of the individual, as well as at the level of family, church, school, and the wider social group settings. The hierarchical structure also appears to stigmatise females far more than males, with the males' perception being that female roles restrict them to the

management of the household duties and the care of the family. A qualitative study by Turk et al. (2013), undertaken in Tongan rural areas, demonstrated that culturally resistant attitudes and gender discrimination were more predominant in rural areas. The study found that physical activity for women was viewed by many as impractical, with a women's responsibility being seen as focusing squarely on domestic roles and church work. These socio-cultural and gender issues reflected the stigmatising of attitudes towards women's engagement in structured sporting activities.

Culture and traditional customs form community identity, beliefs and moral values that shape how individuals are inclined live their lives. In Fiji, traditional values have shifted from precolonial to postcolonial stages. iTaukei traditional customs, such as hunting for food and doing moderate to vigorous physical activity, have declined (Goundar, 2016). Beavis and Moodie (2014) conducted a cross-sectional survey in Melbourne, Australia, which found incidental physical activity, such as walking to a public transit station or riding a bike to work, has better health outcomes for individuals. The survey suggested everyday transportation patterns and incidental physical activity, such as the time spent walking to catch the bus or train, were more likely to save lives and decrease the cost of healthcare expenditure. The authors' findings show private vehicle participants were doing incidental physical activity for an average of 8 to 10 minutes daily. On the other hand, study participants using public transport or cycling daily were engaged in incidental physical activity for 35 minutes and 38 minutes respectively. Individuals residing in the inner city were found to be six times more active while using public transport compared with individuals residing in the outer suburbs.

iTaukei in the rural communities undertake incidental physical activity by walking to their farms. Women are active when taking clothes to the riverside to be washed and doing household tasks. Men tend to do more vigorous incidental physical activity because they do more hard labour while farming. These behaviours are changing due to economic globalisation and the use of advanced technology, which requires less manual labour (Cameron et al., 2017).

A qualitative study conducted in a migrant Sudanese community in South Australia indicated cultural and environmental factors have restricted children in Australia from engaging in sufficiently healthy physical activity (Mude & Mwanri, 2016, p. 298). The study suggested enabling and developing programmes to promote and improve incidental physical activity among vulnerable people is a better way of empowering communities. The World Health Organization (2010b) states that, in order to build healthy communities and improve health outcomes, individuals from the community, non-government organisations and government departments must work together to address local community issues. This is also relevant in iTaukei communities, where developing a culturally appropriate environment in which to participate in (incidental) physical activity could help prevent non-communicable diseases. Macniven, Elwell, Ride, Bauman, and Richards (2017) contend physical activity programmes targeting Indigenous communities need to integrate socio-cultural, environmental, economic and policy factors. This would benefit and contribute to improving healthy lifestyles for the iTaukei people.

Many findings from developed nations have reported participants with less education have higher odds of being physically inactive (Bauman, Sallis, Dzewaltowski, & Owen, 2002); this association was seen only among men (Bauman et al., 2012). However, worldwide evidence on the relationship between education and incidental physical activity is inconsistent (Ng et al., 2009). A study conducted by Bauman et al. (2011) in South-East Asia found participants with less education are more active. Highly educated participants in China were less active during work and transport but were engaged in more incidental physical activity during leisure than less educated participants. In the Philippines, Malaysia, Fiji and Nauru, there was no relationship seen between education and physical activity. The authors' findings suggest a relationship between the type of physical activity and socio-economic factors. In developed and developing nations, rates of incidental physical activity are higher among educated and wealthy participants. Bauman and colleagues revealed small nations with small economies like Nauru have a high prevalence of low incidental physical activity amongst men (80.7%) and women (95.2%) during sedentary time. The prevalence of low incidental physical activity during work hours was 60.5% for male participants and 70% for female participants. Socio-economic and demographic factors such as education and age are not correlated with the prevalence with people in the Nauru community engage in health-enhancing physical activity. Incidental physical activity participation in Nauru and most likely in other participating nations (Australia, Fiji, Malaysia and China) is influenced by other factors, such as cultural values, beliefs and microenvironments. Bauman and colleagues acknowledge a widespread of

physical activity across different platforms (such as work, active communities, leisure time, household and domestic duties) in cross-national research, adding to the evidence about the factors of incidental physical activity participation in these platforms and the overall directions for public health implementation. For example, living in a low socio-economic population can decrease physical activity, as primary care providers are busy dealing with the challenges and activities of daily living (Bell, et al., 2016). Brown (2014) suggests the influence of socio-cultural factors need to be considered when assessing physical activity. For instance, incidental physical activity such as domestic activities can be a significant source of energy expenditure for women in developing nations, conveying health-enhancing benefits.

Based on the argument from above authors, effective public health actions will require a different approach in developing nations, and the socio-cultural and socio-economic factors of the communities must be considered. In so doing, appropriate cultural health promotion strategies can be tailored to meet the specific needs of the community. Given the association of socio-cultural factors with incidental physical activity appears to be context specific, and due to some of the inconclusive evidence for the rural iTaukei population, further research is needed to better understand this relationship in Fiji.

2.15 CONCLUSION

There is a paucity of published research about the socio–cultural factors that relate to obesity in the rural areas of Fiji. Further, the literature review highlighted the need to understand, at the local level, the impact of globalisation and urbanisation on food supply and shopping behaviour, as it

related to Pacific nations. The literature also highlights the need to understand the socio-cultural aspects of the environment and how it influences both eating habits and physical activity. In addition to addressing these issues, current research, while still in early stages, seeks to identify the social, cultural perceptions of body image, and how these socio-cultural factors have an influence upon obesity. Hence, the research outlined in this thesis will explore and contribute to our greater understanding of these issues.

The research will use the participatory approach, discussed in detail in the Conceptual Approach outlined in chapter 3, to gain a greater understanding of how the different factors interact with each other.

Chapter 3: Conceptual Approach

3.1 INTRODUCTION

The previous chapter argued to adopt a community-wide participatory platform as the research approach to gathering in-depth information. Forming a complete understanding of the socio-cultural context of obesity enables the development of a culturally sensitive health promotion intervention, particularly in rural iTaukei communities in Naitasiri province, Fiji. Initially, this chapter will elaborate on the CBPR process and explain the principles relating to CBPR approaches as described by various researchers. This description will provide a historical background explaining the phenomenon and the related epistemological traditions within this approach.

The thesis will outline a more complex approach to the use of CBPR as it is applied in this research with the iTaukei communities. Specific attention is given to the nine principles of the CBPR process that gave focus to and directed this research and provided the framework for the final community feedback as well as an acknowledgement and elaboration of the questions and criticisms of the CBPR research process. The chapter also discusses the Indigenous principles that underpin this research, developed by (Walters et al., 2009).

The second half of this chapter will explain the research methods and designs that have been adopted and provide detail on the mixed methods approach. Approaches to partnership development, interviews with the key respondents and the community, and explanations regarding their viability

and appropriateness will be fully described. This chapter will conclude with an outline of the feedback procedures that completed this research project.

3.2 METHODOLOGY

Methodology is how research is conducted, how a researcher discovers the findings, and how knowledge is gained. According to McGregor and Murnane (2010, p. 420):

> The word methodology comprises two nouns: method and ology, which means a branch of knowledge; hence, methodology is a branch of knowledge that deals with the general principles or axioms of the generation of new knowledge. It refers to the rationale and the philosophical assumptions that underlie any natural, social or human science study, whether articulated or not. Simply put, methodology refers to how each of logic, reality, values and what counts as knowledge inform research.

3.2.1 Wellbeing and iTaukei World View

World view was described by Rossman and Rallis (2016) as how I interpret reality and what I believe to be true. As far as we (people in iTaukei communities) were told during our upbringing, we all have one. This could be influenced by the thoughts of those we are exposed to, what we were told or who we participate with; everyone really has a particular perspective on what is going on. As put forward by Smith (2000), the Indigenous knowledge about maintaining self-health and keeping healthy does not necessarily follow a Westernised model, which highlights fundamental differences between the physical and mental health states of Indigenous populations.

The iTaukei world view pertains to three significant factors: the heavens (*lagi*), the earth (*vuravura*), and the spirit world (*bulu*) (Nabobo-Baba, 2006, pp. 37-39). As a Fijian researcher, my world views are associated with the

culture I grew up in. Therefore, iTaukei culturally associate with land (*vanua*), symbolising beliefs and values, which means individuals of a particular locality have similarities. This is associated with their ideology of living and iTaukei people's values and beliefs about life in this world and their perceptions of the world. This is linked with health and wellbeing in the world: one has to live according to the *vanua* values and beliefs (Ravuvu, 1988, pp. 13-16).

Wellbeing and health are significantly established by these worlds. There are strong associations between culture, customs, and epistemology (Nabobo-Baba, 2006, pp. 29-34). Therefore, in conducting this doctoral research I had an obligation to establish how customs, culture, and epistemology build upon health and wellbeing.

My intention was to understand rural iTaukei community perceptions of health and wellbeing. Therefore, I undertook the CBPR approach to understanding subjective knowledge. The lessons obtained from previous iTaukei research and CBPR approaches showed me not to accept objective knowledge but to go beyond this to increasing knowledge outside the academic context using participatory ideas. Fletcher and Mooney (2003) state that, philosophically, CPBR is an inclusive approach that deals with a variety of ways in which knowledge regarding the world can be created. Instead of relying only on prior scientific knowledge or constraining oneself to academia, CBPR accepts that multiple forms of knowledge exist in various locations and institutes. In this regard, CBPR challenges the validity of current knowledge of a local and creates epistemological explanations regarding it (Lincoln, Lynham, & Guba, 2011). Similarly, Minkler and

Wallerstein (2010) proclaim that the deconstruction of power and democratisation of knowledge could be explicitly undertaken through the CBPR process and that this is also is an excellent way to value the knowledge obtained from the community.

In this doctoral research, the author has taken the CBPR tradition as the chosen position, believing that science, research, and knowledge production should be taken as an ideological process rather than being a neutral or value-free construct. Researchers who favour this approach 'accept first and foremost that all inquiry is political by definition'. Fletcher and Mooney (2003, p. 32) described that information does not exist in a vacuum; rather, different articulations of power generate scientific knowledge that is further translated in varying intellectual continuums.

3.2.2 Community-Based Participatory Research

CBPR is an applied approach and the aim is to influence change in community health, systems, programs, and policies. The term CBPR gained popularity in the 1990s when some academics and scholars noted how partnership-based approaches were widely defined and administered. From this period onwards, various descriptions of the CBPR process came to light (Israel, et al., 2011; Viswanathan, et al., 2004; Wallerstein & Duran, 2006). One reason attributed to the popularity of the CBPR approach is its use across different academic disciplines and subjects. However, scholars used different terminologies to define participatory research and to highlight its significance (Israel, et al., 2011; Wallerstein et al., 2008). Similarly, Israel, et al. (2013) noted large numbers of community-based participation projects in a public discipline where collaborative research efforts produced fruitful

outcomes. From 1990 till the late 1990s CBPR had been comprehensively used in the health field, involving different community participants within the research to identify the purpose of study, plan its administration and analysis, implement the CBPR approach, and disseminate the findings of the research (Israel, et al., 2010; Wallerstein, et al., 2008).

CBPR is a model for action-oriented research that is mainly based on a relational interaction between the researcher and study participants (Denzin & Lincoln, 1994). It focuses on the physical, social, and structural environment through involving members of the community, representatives from major public services, and researchers throughout the entire research process (Israel, et al., 1998). One of the most cited definitions of CBPR defines it as: 'a partnership approach to research that equitably involves community members, practitioners, and academic researchers in all aspects of the process, enabling all partners to contribute their expertise and share responsibility and ownership' (Israel, et al., 2010, p. 294) .

This doctoral research selected the definition of CBPR as:

> …[a] collaborative approach to research that equitably involves all partners in the research process and recognizes the unique strengths that each brings. CBPR begins with a research topic of importance to the community and has the aim of combining knowledge with action and achieving social change. (The Kellogg Health Scholars Program, 2006)

The significant words in this definition are 'collaborative', 'equitably', 'combining knowledge with action', and 'social change'. The rationale and the intent to utilise CBPR in this research to form a partnership with communities where I, as a researcher, research with the iTaukei community to answer the

study question, where I can work side-by-side with iTaukei community members to develop the research question and methods, applying research into action, disseminating the findings, and implementing them. The most important reason I chose CBPR was because the community became part of the research and I became engaged in the daily activities of the community, which made me turn away from traditional research.

Wallerstein, et al. (2008) observed that geographic location has a part to play in the definition of the CBPR approach. The term *community-based participatory research* was used mainly in the United States of America while developing nations appeared to use the terms *participatory* and *action research*. In Australia and New Zealand, one finds the term action research used comparatively more than other terms (Smith, 1999). For example, a community-wide participatory model was established for undertaking the diabetes project that was described previously (Tipene-Leach et al., 2013; Tse, Laverack, Foroughian, & Jackson, 2006) based on a model of community development. The literature shows the terms action research, and participatory (action) research, are frequently used interchangeably since they both contain similar propositions (Holkup, Tripp-Reimer, Salois, & Weinert, 2004; Wallerstein, et al., 2008).

CBPR has been an authentic and credible approach in research about communities and their behavioural patterns since the early 1990s, which makes it highly suitable for utilisation in health, behavioural, and public fields (Chavis, 2001; Cochran et al., 2008; Israel, et al., 2011). This is ‘because of its ability to inform understanding of patients’ experiences, improve or generate services, facilitate community outreach and engagement, enhance

education, and augment cultural awareness' (Chavez, Duran, Baker, Avila, & Wallerstein, 2008, p. 95). The primary emphasis of community-based research in the public health field lies in the participation of non-academic members, the research process as creators of validated knowledge (Israel, et al., 1998). In this manner, the CBPR research approach is deep-rooted in the conviction of shared sovereignty and community partnership throughout the research journey. CBPR approaches seek to involve partners at all stages of research (Israel, et al., 2013; Israel, et al., 1998; Minkler & Wallerstein, 2010).

King, Gill, Allender, and Swinburn (2011) argue that community-wide research methodologies have provided a platform for successful interventions in various health and behavioural research disciplines. These interventions are successful primarily due to the participation of community members during the design and planning of the research process (Israel, et al., 2011; Love, Zimmerman, & Cohen, 2010; Maton, 2008). Importantly, the main aim of this research approach is not only as an increment to the understanding and knowledge regarding the issue being investigated, but also it utilises that knowledge to make informed decisions on the wellbeing of community members through direct interventions and policy changes.

In a comprehensive literature review, as demonstrated in Figure 3.1, Israel, Schulz, Parker, and Becker (2001) discussed the nine main principles of the CBPR process, acknowledging its broad applications in varying contexts and determining that these principles are entirely dependent on participants being involved in the process, the research context, and the main purpose of the study.

Holkup, et al. (2004, p. 163) argued on the basis of differences in the principles of CBPR approaches while noting that:

- The ontological paradigm of each principle is the same.
- These principles all rely upon similar epistemological participative frameworks and experiential understanding of the studied phenomenon.
- These principles are mainly based on an action-oriented approach for the research.
- These nine principles acknowledge the importance of involving participants in the research process and are based on an encouragement of their involvement.

Figure 3-1. Principles of CBPR. Sourced from (Israel, et al., 1998; Israel, et al., 2011).

Viswanathan, et al. (2004, p. 25) explored the core ideas of CBPR and stated that: (a) the reciprocal co-learner relationship exists between the participants and the researcher; and (b) this approach offers an immediate advantage of being able to utilise knowledge in creating positive changes in the social lives of the participants through practice policy interventions. They also identified four central themes of this approach, which are as follows:

- It acknowledges the significance of cultural, social, economic, and political influences in shaping the behaviours of society and in directing health-related behaviours and outcomes (i.e. an ecological approach).
- CBPR engages the members of a community to offer their inputs on selecting a particular research topic, collecting relevant data, developing the project, and interpreting results to produce meaningful information (collaboration).
- It makes use of both quantitative and qualitative research methods using different related designs and strategies for collecting, synthesising, and analysing data.
- It prioritises the utilisation of findings in developing interventions and applying research perspectives into practice using policy actions. (Viswanathan, et al., 2004, p. 124)

Israel, et al. (2013) reasoned that despite CBPR being extensively utilised in participatory process, the researcher must commit to a long-term research process involving various partners from the community that leads to

positive outcomes for the entire community, based on relevant social policies and actions. Accordingly, the process must be established on structural, social, and physical attributes through addressing the underlying inequalities using the active participation of community members, elected public service representatives, and other participants throughout the entire research process (Israel, et al., 1998).

A significant difference in arguments is observed in the review of the literature between 1998 and 2001 in relation to the key principles of community-wide interventions based on communal participation. In research outlined in older literature, the term community-based research was implied, while from 2001 onwards, specific terminology, such as community-based participatory research, is utilised to stress the need for participation from all members throughout the entire research process to obtain the required actions (The Kellogg Health Scholars Program, 2006). Post-2001 literature also outlines the participation of non-academic members in affecting societal systems and encouraging positive change behaviours through mutual understanding and interactivity. Israel, Schulz, et al. (2001) posited that there are vast differences between the two terms. Community-based research is primarily focused on the researcher and uses the community only as a vehicle to study the phenomenon, generally with little involvement from its members. In contrast, CBPR is primarily based on the active engagement of the community members within the research process and the development of partnerships between the researcher and the community members.

Green et al. (1995) further reinforced these claims by stating that CBPR is a research approach conducted in direct contact ‘with’ the community

rather than ‘on’ the community. This means that while community participation is essential, the topic under study may directly relate to the community-based issue itself. As Minkler and Wallerstein (2011) stated, this type of research is more ‘community placed’ than ‘community based’, which they say is the main point of difference. Similar propositions were put forward by Rifkin (1990), who believes that communal participation is about active engagement in the research process by one’s own will and choice, with the inclination to contribute positively towards societal change. This means that this research approach does not simply consist of taking part in data collection, but also entails ‘active’ participation.

Viswanathan, et al. (2004) emphasised that social change and collaboration of community in research are the two main attributes of the CBPR process. A systematic review conducted by Viswanathan and colleagues, comparing over 50 publications by varying researchers, showed that CBPR is a collaborative research approach whose main aim is to involve the community in the process of bringing about positive social change while utilising community participation as an opportunity to learn about the issues and bring needed improvements. Likewise, Green, et al. (1995) argued that new knowledge through communal participation directly affects society by bringing about a positive change, whereas other researchers, such as Merzel and D’Afflitti (2003), maintained that participatory research processes must be based upon the process of social transformation using various participatory inputs from the community.

Holkup, et al. (2004) concurred, saying that participatory research is distinct from other research, such as action-oriented research, mainly

because non-academic individuals play an essential role in the process along with the researchers. In Holkup and colleagues' view, action research still appears to be based on the role of experts and researchers, while CBPR, on the other hand, places the emphasis on ownership of the issue by the community, which generously participates in the research to affect social change. Similarly, Minkler and Wallerstein (2011) referred to CBPR as an approach that exceeds community outreach and, instead, focuses on the participation of community for positive social change.

The study design in this doctoral thesis follows this particular definition of CBPR as stated earlier in this chapter, which is indeed a collaborative approach to research that not only acknowledges its unique strength in attaining research objectives but also involves all partners in the research process. CBPR should begin with a pressing communal problem that needs to be investigated and inform subsequent actions through interventions, to benefit the community and eliminate disparities in health care (Minkler, 2010).

3.2.3 Hypothetical and Metaphysic Principles About CBPR

Wallerstein, et al. (2008) discussed the hypothetical and metaphysical paradigms of participatory research, which are based on entirely different principles on opposing ends of the political and theoretical continuum. These are the 'Northern principle', as exemplified by action-oriented research, which is a pragmatic 'problem solving utilitarian approach' (Lewin, 1946), while the 'Southern principle', as characterised by the works of Paulo Freire and Orlando Fals Borda, was primarily based on emancipatory research, which opposed traditional colonisation and challenged the political supremacy of

new knowledge deemed to be possessed only by the higher social classes and elite groups (Wallerstein & Duran, 2006).

Minkler and Wallerstein (2010) outlined the Northern principle within the context provided by the sociologist Talcott Parson, and through an explanation of the consensus model as formulated and practised in numerous public service fields, such as social psychology, education, and organisational learning and development. They reported that the consensus model is based on a combined exchange of thoughts and ideas, thus enabling self-reflection to the researchers and the members of the community taking part in the process. This approach puts into practice rational scientific knowledge and applied self-reflective insights for resolving real-life problems.

The political and social changes of the 1960s saw the initiation of the Southern principle, which is often referred to as participatory research. This paradigm is mainly associated with community development movements that criticised the education systems and standards in the early 1970s throughout Africa, Latin America, and Asia (Green, et al., 1995; Hall, et al., 2011; Heron & Reason, 1997).

From these oppositions and protestations, scholars began challenging the different relations that existed in a research activity and questioned the ownership of knowledge including the benefits of that knowledge (Wallerstein & Duran, 2006). Derived from critiques of the Marxist ideologies and liberation theologies, these academics and scholars discarded the idea of positivism in academia and, instead, argued that these were only meant for higher social classes and the affluent community members. Some social

scientists and academics defied the colonising nature of research by claiming that it extended the societal benefits and advantages of the elite by dominating the research problem and even manipulating it to conceal the real issue (Voyle & Simmons, 1999; Wallerstein & Bernstein, 1994).

In this context, the publication *Pedagogy of the Oppressed* is noteworthy for its discussion on colonial oppression, written by the exiled Paulo Freire (1970), who was a renowned Brazilian academic. Freire challenged positivist traditions that were prevalent throughout educational systems of that time, stating that this education made the reality appear objective; however, education is always provided within a social construct. He also posited that reality should always reflect people's perceptions about their own experiences as influenced by the governing forces (and power) instead of taking it as an absolute truth in isolation (Smith, Chambers, & Bratini, 2009).

The term 'conscientization' was coined by Freire, who explained this as a process through which the victimised social classes in society (often underprivileged or poor people) would obtain increased knowledge about different forces impacting on their lives and would then use this knowledge to change their own situations through self-awareness (King, et al., 2011). In this circumstance, communities should not remain passive study themes, but rather should participate in the research process as active members to be able to bring about positive social change. Simultaneously, researchers' commitment to social justice requires them to question and challenge their own role as information producers and to encourage the contributions of the community members in the research process.

The main reason behind the appropriateness of CBPR in similar situations is its critique against power inheritance that remains validated among minorities and ethnic groups suffering from exploitation, political and economic marginalisation, and disengagement that could better be explained by this type of research approach (Israel, et al., 2013; Minkler, 2010). Recently, poststructuralists, feminists, postcolonials, and scholars of colour continued this tradition following the benefits it offers to help in expressing grief against societal vices. As Minkler and Wallerstein (2010, p. 686) argue, the use of the CBPR approach is critical to the investigation of issues such as those of cast, colour, creed, race, culture, and gender, since it permeates the entire research process, and interprets these social problems in a better manner.

As acknowledged by Minkler and Wallerstein (2011), terminology explaining the differences in participatory research approaches between the Northern and Southern traditions is particularly complicated because it underlies individual research practices that differ according to contexts, historical instances, and how it is developed and influenced by the political dominance of project stakeholders. However, Minkler and colleague argued that to avail maximum benefits, the core principles of CBPR must reflect the main aim of the researchers, which should be emancipatory (Minkler & Wallerstein, 2011).

3.2.4 Sovereignty

Wallerstein, et al. (2008) maintained that for diminishing and challenging social dissimilarities and health inequalities, it is essential first to understand how sovereignty works, and to see this clearly through a bigger

picture of the world. Wallerstein and colleagues stated that knowledge derives from sovereignty, and it is a component derived from a larger social organism. As an example of this, during the research design stage of this doctoral research project, the researcher came across people working within the health care system, who discussed resource allocation and its need to be included in the research, while also talking about health funding decisions as they applied to Fiji. Urban health care was one of the examples given in this regard. I formed the impression that funding was initially allocated to the urban population for treatment of illnesses for high SES people only, who were viewed as deserving and legitimate receivers of major funds, while no attention was given to rural iTaukei populations, who were geographically isolated and economically distressed. In keeping with the goals of CBPR, it was important to understand this trend of resource allocation among the high SES and the poor iTaukei people to not determine the right questions and not alter the uneven distribution of resources by economic supremacy and gender, race, or social class, and so forth. It is essential to understand this to gain an understanding of how sovereignty operates within today's Fiji.

Foucault (1980) identified different perspectives of sovereignty as exploitive, while also suggesting an alternative method to conceptualise sovereignty, which helped in directing this doctoral research project. Foucault argues that sovereignty is mainly relationship-specific; hence, it needs to open up to new challenges. Rather than being referred to as static, at every level (community, family, institutional levels, etc.) there are different ways in which dominant sovereignty systems, as maintained by Foucault, could be

challenged or accounted for, which also develops peculiar ways of thinking about the world in a different manner (Foucault, 1980).

Wallerstein, et al. (2008) advocated a larger potential for sovereignty in relation to the CBPR process when this perspective is considered. Henceforth, if, on one hand, academia restricts researchers from interacting freely with community members, the CBPR process allows joint decision-making, collaboration, and teamwork to gain mutual skills and develop combined platforms for a healthy exchange of ideas on subjects of mutual interest. In admitting that restrictive sovereignty can jeopardise social systems and completely prevent people's freedom of expression, the CBPR process questions these biases and prejudices and this dominance, and involves equal participation from all players within a society to affect positive changes in the society (Wallerstein, et al., 2008, p. 74).

3.2.5 Importance of the CBPR Approach with iTaukei

Prioritisation is given to social change and power-sharing mechanisms in the CBPR processes, so it is a good fit for researchers working with minorities who feel deprived and abandoned, and can assist in reducing the gap between practice and theory (Durie, 2004; Durie & Matatu, 2005; Israel, et al., 2013). As Minkler and colleagues argue, 'incorporating community knowledge claims into scientific processes can radically shift not only the shape and direction of the research but, more fundamentally, the power dynamics of science production itself' (Minkler & Wallerstein, 2010, p. 254). Based on an ecological approach, an understanding of health inequalities is necessary to gain insight into race, gender, and caste differences, and should inform interventions and decisions related to promotion of health for

different social groups (Green & Kreuter, 2005; Minkler & Wallerstein, 2011; Schultz et al., 2011; Skolimowski, 1994).

The philosophy of CBPR lies in the participation of the community rather than discussing issues without members' involvement (Mohammed, et al., 2012). In creating partnerships and reflecting upon local cultural values, CBPR processes can critically engage with issues related to power sharing, resource allocation, and racial inequalities, thus developing itself into a progressive and dynamic research approach (Shalowitz et al., 2009). Fletcher and Mooney (2003) explained how CBPR benefits researchers who aim to work with Indigenous populations, as it assists in knowing their particular opinions while treating cultural and scientific knowledge on an equal basis.

As discussed earlier, the research approach for this study should be designed to appreciate and to be responsive to the socio-cultural context of iTaukei obesity, including cultural practices. Successful health interventions can arise from the interaction with public stakeholders to promote health in a culturally appropriate manner (Koelen & Van Den Ban, 2004; Rifkin, 1985, 1990; Rimer & Glanz, 2005). The CBPR approach is somewhat useful in this regard, as its related intervention strategies reflect the cultural norms, behavioural patterns, values, and expectations, and the environmental context of community members (Minkler & Wallerstein, 2011). Such research can inform public health interventions with an increased sensitivity to diverse cultures and minority populations while planning for the prevention of diseases such as obesity (Parkes et al., 2009; Tindana et al., 2007).

As discuss earlier, the impact of colonisation on iTaukei health is another important aspect to consider. As Parkes, et al. (2009) outlined, isolation and marginalisation create devastating penalties for Indigenous identity, traditions and norms, self-esteem, and solidarity, and for the economic survival of the community, in this instance the iTaukei people. Consequently, the data showing the rates of morbidity and mortality for iTaukei are far greater in comparison to non-Indigenous populations (Voyle & Simmons, 1999, p. 1035). CBPR is, therefore, established as an approach for recognising: health disparities and for considering : elements of inequality such as poverty, unemployment, favouritism, and racism, among others (Israel, et al., 2013; Israel, et al., 1998).

3.2.6 Contextual Knowledge of Research for iTaukei

iTaukei scholar Meo-Sewabu (2015, p. 96) noted that for Indigenous people, the history of research is 'inextricably linked to European imperialism and colonialism'. Research has mainly relied on British knowledge creation methods, with their beliefs in marginalising the knowledge systems of Indigenous populations. According to Smith (2007, p. 48) a Maori academic in New Zealand, 'Research is a site of contestation not simply at the level of epistemology or methodology but also in its broadest sense as an organised scholarly activity that is deeply connected to power'. Smith argued for a transformative research approach that adheres to the encouragement of social change and positivity in society, while playing a central role in changing the situation of the deprived members, in this research the iTaukei members. To promote co-learning and participation among diverse groups of individuals, researchers must acknowledge the usefulness of Indigenous

theory, practices, and research methodologies (Wallerstein & Duran, 2006). Later in this chapter, the relationship of this doctoral research methodological design to the philosophy of the Indigenous groups involved at each research step will be outlined.

The closeness with which iTaukei contextual knowledge could be related to CBPR practices is open to debate on various levels. There are noticeable similarities in the critiques of power and support for socially-led action research, but at the same time, major differences exist. Dr Unaisi Nabobo-Baba, an iTaukei academic, revealed iTaukei approaches to creating knowledge in comprehensive literary accounts and written research papers (Nabobo-Baba, 2006). Nabobo-Baba critically assessed traditions of research in Fiji, only to conclude that they paralleled insights put forth by CBPR academics who challenged the historical practices led by colonisation. Further, Nabobo-Baba (2006) questioned the political domination of knowledge throughout the high SES of the iTaukei society. Nabobo-Baba argues that research approaches in Fiji are a social construct derived from colonial values over time and that iTaukei communities are unable to enjoy cultural diversity because the research supports and encourages the high SES communities. Nabobo-Baba highlights that this pattern has severely influenced the iTaukei population, restricting their ability to share equal powers, and reflects a reaction to the neo-colonial dominance of research. This demands a coping mechanism for cultural harmony among iTaukei and says much about their behavioural preferences and about Westernised research (Nabobo-Baba, 2006, pp. 1-25).

Meo-Sewabu (2015) described iTaukei contextual knowledge as 'the philosophy and practice of being and acting iTaukei'. Embedding iTaukei contextual knowledge in research, policy, and practice would put an end to the Western dominance over iTaukei populations, and ensure 'ITaukei language, culture, knowledge, and values are accepted in their own right'(Meo-Sewabu, 2015, p. 21). Debating in detail on iTaukei practices, principles, and knowledge, Meo-Sewabu (2015, p. 137), defined this knowledge as 'flourishing of a proactive iTaukei political discourse'. Furthermore, Becker (1995) defined contextual knowledge of the iTaukei communities as being initiated, defined, and controlled by them.

ITaukei educationist Nabobo-Baba (2006) stressed that iTaukei ownership and language are essential pillars in the creation and development of knowledge. Gaining this is different from the Western approaches because it centres only on the iTaukei perspectives of seeing the world and seeking solutions to their own issues. Based on distinctive metaphysical foundations and epistemological paradigms across iTaukei research, the research methods are also largely different from other academic processes. As Meo-Sewabu (2015) suggested, iTaukei contextual knowledge is not only a renewed version of Western dominance, but it is also culturally-specific concerning its development based on iTaukei vocabulary. Instead, iTaukei contextual knowledge, in its traditional form, has epistemological roots that originate during the time of the creation of the universe. Correspondingly, Nabobo-Baba (2006) stated that this practice shapes the iTaukei perspective of the world view, the way they see themselves within this world, and the issues and questions they identify. Further, this practice has an impact on the

methodologies they use to seek appropriate solutions to these matters. These practices are certainly larger than the involved individuals, and the specific 'moment' in the present iTaukei lifestyles. The essentiality of iTaukei contextual knowledge in the perspective of its own language reshapes and reforms the relation between its own culture, traditions, language, and knowledge (Nabobo-Baba, 2006).

Nabobo-Baba (2006) posited that research planning certainly reflects the epistemological issues as well as issues related to power sharing. A distinctive set of iTaukei arguments is required to shift these research patterns and frameworks in light of common physical activity practices while constructing meaningful knowledge. Baba, Boladuadu, Vatuloka, and Nabobo-Baba (2013) emphasised central epistemological concepts in the iTaukei research processes and the lessons handed over from the forefathers to the current generations. They also found that the iTaukei view of knowledge differs greatly from traditional models of research, where information remains personally owned by the researcher and it is not common to share it with the world.

3.2.7 ITaukei Contextual Knowledge and CBPR

Community-based participatory research (CBPR) methods and the iTaukei contextual knowledge relate to the conceptualisation of iTaukei knowledge that is normally communicated using iTaukei principles, in particular through oral traditions. As discussed in the literature review, Nabobo-Baba (2006) argued how different researchers, such as Baba, et al. (2013), promoted the central role of culture and language in the promotion of iTaukei literature and research. 'ITaukei is the only language that can access,

conceptualise and internalise in spiritual terms this body of knowledge. From this, we take it that iTaukei language and iTaukei contextual knowledge are inextricably bound. One is the means to the other' (Nabobo-Baba, 2006, p. 45).

Although there are similarities between iTaukei contextual knowledge and CBPR processes with respect to epistemological approaches, researchers working in both traditions view knowledge production and scientific investigation as an ideological framework rather than being neutral or value-free. Instead of privileging and situating scientific knowledge, CBPR research and iTaukei researchers often mutually relate to the critical construction of theories that also reflect upon more than a single perspective on the world. As aforementioned, Smith (2007) located certain similarities on the conscientisation of critical theory and its resulting reflective change that may also bear resistance from outside forces.

Baba, et al. (2013) warned that the contextual knowledge of iTaukei should not remain allied to the participatory method. They believe that assimilating the self-conviction of iTaukei populations with CBPR approaches would endanger a great deal. Baba and colleagues advocated a participatory method that exploits the main purpose of contextual knowledge research carried out in iTaukei communities, such that it restricts and even lessens the influence of the researcher so much that the participants gain primary control over the process and defines sovereignty over it. Meo-Sewabu (2015, p. 124) accepted that an 'international methodology of participation' is endangering to various participants in some form or other. The language of research (objectivity, validity, and replicability) was highlighted as a major force in

creating participatory space for the respondents so that they determine their own realities based on their specific experiences of the world. Baba, et al. (2004) and Nabobo-Baba (2006) reasoned, along with the descriptions put forth by Denzin and Lincoln (1994), that a postpositivist frame of reference along with the use of a non-iTaukei methodological framework will prolong the habit of iTaukei communities to choose their own influencing elements and validity criteria. Wallerstein, et al. (2008) argues that proper research process and epistemological rationality is not something decided by the researcher, but is sought through coordinating with the iTaukei communities and developing suitable frameworks, which not only produce knowledge for them but also culturally represent it.

By comparison, Wallerstein and Duran (2006) proclaim that, in the case of Indigenous-related research, community-based research approaches would serve the purpose more efficiently. According to these researchers, a social, economic, and cultural disassociation is found in academic literature carried out on iTaukei contextual knowledge and the iTaukei as a community group. Wallerstein and Duran further posit that future research prospects for the iTaukei will be endangered, should elitist research reign supreme and the contextual knowledge base of the iTaukei communities be unnoticed. Minkler (2000) highlighted mistrust in and the unreliability of known iTaukei interventions and believed this would only be changed through direct means of communicating with the population using relevant participatory research approaches. Israel, et al. (2013) maintain that this is essential because the communities must know actual problems, and express those problems, to be able to resolve them through adequate research participation.

Park (2006) identified several similarities between the contextual knowledge base of an Indigenous communities' and the CBPR processes, which is applicable to this study. Both value research that is mainly action-driven and focus-oriented and, secondly, both support self-determination and communal welfare. Israel, et al. (2013) and Park (2006) validate the specialised knowledge and expertise that is locally attained and support the goal of bringing positive and enduring changes to the society. However, Park (2006) recognised a point of difference between the contextual knowledge base of the Indigenous community and the CBPR processes. This doctoral study is designed to achieve the contextual knowledge of CBPR being produced for the people and with the people, and it is directed towards giving a voice to their world views while seeking solutions to local iTaukei problems.

3.2.8 Implications for iTaukei Research Approach

According to Wallerstein and Duran (2006), researchers should aim to include Indigenous theories, practices, and research methodologies so that more participatory approaches can be adopted. As previously debated, CBPR and iTaukei contextual knowledge are similar to each other, albeit from different viewpoints. Nevertheless, some differences exist on the basis of metaphysical foundations.

I am a mixed-race (mother iTaukei and father Fiji-born Indian), middle-class researcher born in Fiji, who grew up in New Zealand. Therefore, I grew up with a Western world influence and traditional strict parental values similar to the community of my research focus. This carries essential implications for my research methods and design and I discuss these in the following passages.

This doctoral research recognises that the history of colonisation cannot be overlooked when conducting research on iTaukei health statuses, since it largely affects their socio-cultural and economic development (Durie, 2004; Nabobo-Baba, 2006; Renzaho, 2004). However, knowledge about iTaukei health cannot simply be studied in the context of a British medical model where an individual's physical and mental being are separate states that do not meet. The *Tanoa Health Belief Model* developed by Meo-Sewabu (2015) embeds cultural elements to assure good health conditions comprising four dimensions: mental, familial, physical, and social health paradigms.

Bramley et al. (2006) advocate the de-colonisation of health promotion interventions that would otherwise create deficits in the health models, and would not acknowledge the structural and historical roots of the health problems facing Indigenous communities. Smith (2000) observed that the word 'research' cannot be deemed to be inseparable from British colonialism. In support of this concept, three public health researchers in Australia undertook various collaborative projects with Aboriginal communities in Victoria, offering patronage services to de-colonise health research and promotional campaigns regarding health care and welfare. Smith (2007, p. 112) argued that 'indigenous methodologies tend to approach cultural protocols, values, and behaviours as an integral part of methodology'.

Pyett (2002)suggested that to make de-colonisation happen, new reforms within research methodologies may not provide the answer; rather, simple prioritisation of values and cultural relationships would be useful. It was also recommended that power sharing with different participants belonging to the same community, based on the virtues of friendship,

affection, and trust, would lead towards a shared understanding while acknowledging the contributions of participants in the research activity.

Furthermore, according to the arguments of this researcher, health promotion interventions should be linked with tangible outcomes based on the real-world problems and needs of the studied community. More importantly, this researcher contemplated that for future research to progress, the primary focus should be placed on the communication between the participants and the researchers, to enable positive research stories in the studied community while allowing a closer and deeper investigation through working with victimised or powerless communities. Pyett (2002) referred to the adoption of comprehensive health models to reframe and re-devise health promotion campaigns and schemes towards newer approaches that will highlight the willpower of the Indigenous people rather than portray them only as a problem.

3.2.9 Indigenous Philosophies

As noted by Walters, et al. (2009), several Indigenous communities have fallen prey to ‘parachute researchers’ who drop into a community only to take with them whatever insights they want. It is to the utter disgust of the community that some of the real-world researchers never discover their problems, let alone find solutions to them. In this historical situation, CBPR, according to Mohammed, et al. (2012), is essential in building upon existing knowledge through participation from the community while being culturally relevant and expressive in highlighting local problems, promoting opportunities for co-learning, and leading to positive, joint decision-making processes. Walters et al. (2009) offered insights that have been developed in

favour of the CBPR process over the years through their work in various communities involving direct participation with the community members and citizens in the United States. Walters and colleagues explained several other characteristics of the CBPR process, in addition to those that are outlined above as the nine golden features shown in Figure 3.1.

Walters, et al. (2009) developed a further set of eight Indigenous principles because their main motivation remained in re-centring the knowledge about Indigenous populations rather than in de-colonizing it. These principles were developed on the basis of key cultural beliefs and traditions of the Indigenous peoples and produced a 'community-up' definition of researchers' behavioural ethics, which were further discussed by Smith (2000). The principles given by Walters and his colleagues reflect the primary relationships that must progress within a participatory research approach between the participants and the researchers. These principles are further illustrated in Figure 3.2.

However, according to the viewpoints of Wallerstein and Duran (2006, p. 314), CBPR is 'not simply a community outreach strategy but represents a systematic effort to incorporate community participation and decision-making, local theories of aetiology and change, and community practices into the research effort'. Israel, et al. (2013) further articulated the main differences that exist between CBPR and other approaches and found that CBPR provides greater integral linkage between the researcher and the respondents. Also, the main cultural aspects and cultural safety elements are more holistically embodied, resulting in a smooth research relationship.

Principles	Definitions
1. Reflection	Investigating the main statuses and classes to which different partners belong.
2. Respect	Prioritisation of knowledge, aboriginal epistemologies, cultural procedures, and healing practices as endorsed by the partners.
3. Relevance	In response to their own self-identified needs, the community should particularly come forward to explain their researchable problems and must adequately define the research strategies that, in their opinion, would best resolve their troubles.
4. Resilience	Every element of the research process must take into account the strengths of the community and its resilience in participating for the cause of bringing positive social changes.
5. Reciprocity	Knowledge should be exchanged two ways, with the partners involved being highly respectful of each other and must be willing to participate and collaborate to a greater extent.
6. Responsibility	Partners should take the responsibility to implicate the findings in the right direction while disseminating them meaningfully while utilising their researching competence in resolving indigenous problems.
7. Re-traditionalisation	In the process of scientific inquiry and during the development of research questions, traditional methods of knowledge conceptualisation should be actively embedded.
8. Revolution	To decolonise and indigenise research process to bring positive social change while transforming scientific knowledge should be considered for everyone's welfare and progression.

Figure 3-2. Eight principles designed by Walters and colleagues (Walters, et al., 2009).

3.2.10 Community

Whether in rural or urban areas, iTaukei communities exhibit strong bonds between members. Hence, to increase understanding, the researcher must allocate meaning to the Indigenous community's values, culture, beliefs, and norms. Koelen and Van Den Ban (2004) describe the community as a group of individuals who characterise themselves by their group affiliations, involvement in communal interest, communal social organisation, and communal social control factors. Nutbeam (1998) describes the community as a group of individuals, frequently living in a defined geographical region. These individuals share communal culture, values, and norms, and are settled in a social structure that solidifies the relationships, which the community has established over a period. Members of the community appear to gain their personal and social identity by sharing common beliefs, values, and norms, previously established by the community. They display some knowledge of their identity as a group and share communal necessities and an obligation to gather together (Nutbeam, 1998). Hillery (1995) conducted a literature review and analysed 94 definitions of community; he found three similar basic components of community:

- people in social interface
- living in the same geographical region
- having one or more common relationships.

ITaukei communities have developed communal values, beliefs, culture, and religion. Their community frequently involves a group of individuals who share a communal environment, skills, or interest, and involves people who reside in the same environment. This includes people who live in the same

region, for example, a similar neighbourhood, the same metropolis, or the same state (Holt, et al., 2013). In Fiji, people in a community are aware of their identity as a group, they share communal essentials, and they are committed to satisfying needs within the community. In the rural villages of Fiji, communities always have exceptionally high communal needs and culture.

In recent years, knowledge of the community has resided more in a particular physical space, with its reserves being acknowledged more, and with benefits related to those spaces being given to the community (Rheingold, 2000). In addition, the progress and growth of collaborative media and computer technology have eliminated many geographical dissimilarities among the traditional communities (Bowes, 1997); the advancement and use of the internet and social media has reduced the disparities among the various communities. According to Bowes, internet use tends to eliminate the significances and differences previously created by geographic zones.

Glanz, Rimer, and Viswanath (2008) noted that communities have many priorities, which means an intervention programme needs a lengthy period to develop, plan, and implement, and this must be acknowledged in the programme goals. Additionally, the researcher's expectations may exceed those of the communities. Developing and enabling the community is closely related to the concept of community development that was advanced in the 1950s with the support of the United Nations (Tones, 1993).

Community development is defined as health knowledge research in underprivileged, rural, and remote regions. Lately, the definition has been

extended to include collaborative programs for the community, the government, and non-profit organisations, which indicate that the development is to improve the economic, social, and cultural situations of the community (Escobar, 2011).

Previously this thesis has highlighted the importance of community development that supports a village to rectify health issues and develop interventions to meet their specific needs. Community development involves working with the community and is used predominantly by social researchers and public health practitioners to work with people, especially when seeking to obtain their confidence, identifying their needs, and stimulating their thoughts to help find solutions to problems, as well as to assist in discovering resources for improvement (Minkler & Wallerstein, 2010).

Community development is considered to be a collaborating programme that enhances community living, helps with planning the requirements of its members, reinforces the importance of self-sufficiency, educates local leaders, and supports the establishment of technical assistance for improving human resources, equipment, material, and funding (Koelen & Van Den Ban, 2004). Tones and Tilford (1994) explain that community development is a method that starts with individuals and their necessities, considers values and the dignity of people, and encourages equal prospects for development.

Community development enables members to take actions for better health outcomes; they achieve this through the active enterprise of diverse divisions in society (Minkler & Wallerstein, 2010). In planning preventive health programs, researchers frequently overlook the significance of effective

collaboration with the community (Warr, Tacticos, Kelaher, & Klein, 2007). This doctoral research will benefit iTaukei people from the application of community development because better outcomes are expected from the study, the result of collaborations between the community and the researcher. Such collaboration will be enhanced through sharing power, informed decision-making, and full participation of the community in all stages of the project including data collection and analysis.

3.2.11 Building Healthy Communities Through Partnerships

Individuals create a healthy community by showing unity and by functioning as mediators of constructive changes. They are also involved in the discovery of new approaches for actions to create a better environment that focuses on healthy lifestyle choices and motivates individuals to appraise their own capabilities (Minkler & Wallerstein, 2010). Brown et al. (2010) argue that community improvement is a necessary determinant for identifying local issues associated with each other and their partnerships. A partnership engages people to collaborate; it also reinforces community capacity for constructive changes over a period, in diverse domains (Bartholomew, et al., 2011). Bartholomew, et al. (2011) believe linking individuals from diverse sectors of the community, via an authoritative direction, leads to achievement. Hancock (2009) emphasises the importance of establishing a partnership. This doctoral research demonstrates the application of CBPR by engaging representatives from pivotal, yet diverse sectors, namely, the Ministry of iTaukei, the local health centre (Ministry of Health Fiji), Fiji National University, local women's and youth clubs, and influential rugby

players from the village. All participants are from the same district, which demonstrates engagement of the CBPR principles.

The work of Hancock supports multisectoral partnerships, seeing them as fundamental contributors from the community. In this doctoral research, they include the local health team, which is a collaboration of individuals from the community who cooperatively promote health programs. The team involves individuals from the non-profit, non-governmental organisations and state institutions (Hancock, 2009).

My doctoral study was supported by the local, provincial, and state institutions, which deliver consultative and technical support for the management of the community programs. These institutions included university research centres (which offer assistance with community analysis, strategic planning, and management, development, and evaluation) and institutions of public health (which provide the community with essential health data, such as the proportion of people with a raised BMI) (Fawcett et al., 1997).

Regarding funding, supporters and government organisations need to guarantee the financial funds required for the community-based development program. In turn, these sponsors need to be acknowledged by the community and the researcher (Hancock, 2009). Further, it is essential to have a wide range of partnerships, representing the entire community, to ensure that changes will lead to enhanced wellbeing, are time efficient, and are an aid in the acceleration of community health action (Tlhabanelo, 2011).

Several international community partnership development programs are being run worldwide, such as ‘addressing the reduction of salt intake’, and

the development of a ‘healthy village’. These partnerships involve the WHO, the World Bank, and the United Nations. As in Fiji, these partnerships aim to improve the wellbeing of communities. Several health determinants and particular health-issues projects involving targeted groups and populations have been commenced by a number of international organisations in conjunction with the Fiji Ministry of Health and local communities.

The World Health Organization (1999) stated that ‘health for all in the 21st century’ is important and that it has significance for the community and partnerships, such as the foundation of the ecological elaboration of mankind. After reviewing the literature, it became clear that there are multiple examples of community-based health improvement developments, in both developed and developing nations; however, there is no published date related to developing programs for community-wide health promotion in Fiji. Therefore, this doctoral research will fill the gap and add knowledge to the worldwide literature on iTaukei communities and CBPR application.

3.2.12 Research Design

Based on my previous arguments, innovative initiatives are essential to design culturally appropriate health promotion programs and interventions that display the iTaukei cultural practices in their true essence. Kreuter, et al. (2003) stated that health programs should be derived, and primarily tailored, from programs for majority populations. These include formative research ideas and use participatory frameworks to ensure the involvement of the targeted people in the outcomes, such as planning of policy interventions. Parker, Chung, Israel, Reyes, and Wilkins (2010) argue that health promotion programs will only succeed on the basis of a culturally relevant design that

must not only respond to the environmental, economic, social, and historical barriers but must also exhibit a close relationship with the culture and ideology of the community. CBPR is a fitting methodological approach because of its constituent-involving and socio-cultural strategies, which can result in successful health interventions for the studied community. A CBPR approach must be based on behavioural tendencies, attitudes, cultural norms, and, above all, the context of the environment of the community (Kreuter, et al., 2003).

This doctoral research focused on a CBPR approach, used in combination with socio-cultural factors and applied to obesity prevention in the iTaukei community, culminating in culturally appropriate programs and campaigns for the adult iTaukei, who are at high risk of NCDs. A community development process working with a specific Indigenous population remains the prime focus of this research, as it looks into various health promotion sources while reflecting on the key beliefs and attitudes of the iTaukei community. The remaining section of this chapter will provide a detailed explanation of the mixed research methodologies and design of this project.

3.3 RESEARCH DESIGN PROCESS IN ACTION

This research is to gain an understanding of the socio-cultural factors of obesity in a cohort of iTaukei (Indigenous Fijians) in a community in rural Fiji islands. This research applied sequential explanatory mixed methods using paper-based questionnaires and semistructured interviews. The initial survey gathered selective information on lifestyle behaviour and the contributing factors about obesity, while the qualitative interviews were conducted to explore community perception on socio-cultural factors contributing to

obesity. This section describes the implementation of CBPR stages and the method of designing and conducting this study.

3.3.1 Conducting CBPR

CBPR was utilised in this research; it pairs the researcher with the community, to become familiar with the local issues that have an impact on the community, in this case, the wellbeing of the community, ensuring they have equal, active participation in forming research aims, design, and intervention processes (Hotze, 2011). For the benefit of the community, participation is essential, and must be feasible and sustainable (Horowitz, Robinson, & Seifer, 2009).

Thus, to develop a rich research design and share the findings, CBPR allowed the researcher and the community to collaborate, share resources, exchange knowledge and skills, and articulate whether an intervention is achievable and practical. For these reasons, the researcher adopted the CBPR approach stages (Love, et al., 2010) which underpinned the foundation of this research.

The stages of CBPR are:

1. *Partnership formation*. The researcher, stakeholders, and community form a team, develop trust, seek power sharing, and make decisions for conducting the research.
2. *Evaluating community strengths and resources available locally*. During this stage, the scholar, stakeholders, and community integrate the community's key informants (influential people) and

insights, and give emphasis to consistency, community feasibility, acceptability, the situation, cultural factors, and local knowledge.

3. *Identifying and prioritising local health issues and research questions.* Here community, stakeholders, and researchers identify major health factors that have a strong influence on the local community that benefits from this partnership research. These factors could be socio-cultural, political, economic, or environmental, influencing the health of the local community and ultimately will be developed into significant research questions that this study aims to answer.

4. *Research design and conducting data collection methods.* During this stage the researcher, local villagers, and the local health team make decisions on the research design and how data will be collected, as well as on the implementation of the research design, such as doing a health assessment of the village using WHO STEPS as the surveillance instrument for NCDs, and conducting interviews with selected participants.

5. *Providing feedback and analysing the data.* Data collection and gathering of the village health assessment survey. The findings of the survey are shared, perceptions of obesity and opinions of its causes in adults are explored, and techniques established to prevent obesity within the local village. A geographical location of the village was sought for the community to meet to prioritise health factors and bring up ideas for inclusion in miscellaneous intervention projects.

6. *Disseminating and explaining research findings.* During this phase, the researcher disseminates the finding. In this instance, a pamphlet was distributed to the local community to disseminate the findings and receive feedback from the local community and the stakeholders. This included the significant findings to be shared among the local community and the stakeholders.

7. *Maintaining, sustaining, and evaluating community collaboration*. During this phase, the community meets and determines sustainability. Within the research, community meetings took place multiple times to discuss and eliminate any discrepancies and to ensure equal participation, ownership, and reprioritising of the research, as necessary. The researcher, stakeholders, and the local community interconnected to sustain the prioritised interventions and partnership integrity, pledging early to remain engaged and work beyond the completion of the research period.

The research approach stages are detailed in Figure 3.3.

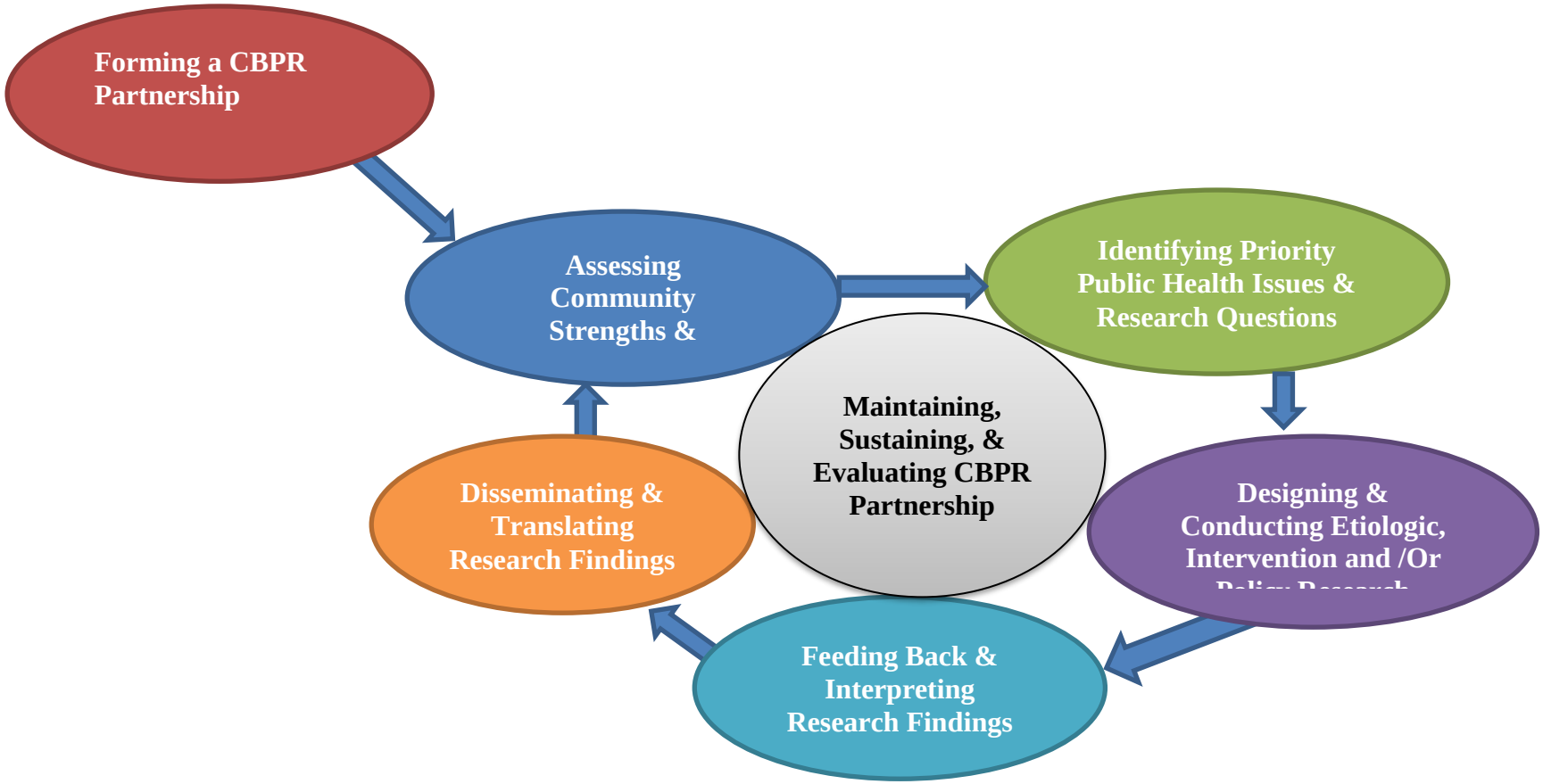

Figure 3-3. CBPR approach stages.

The researcher used CBPR in this research to ensure community involvement and to consciously attain the goal of engagement and reciprocity, co-learning, ownership, and bringing about social change (Horowitz, et al., 2009).

3.3.2 Research Setting

The research setting was Serea iTaukie village, which is located in Naitasiri province, with a land area of 1,666 km^2 (643.25 square miles). The location map presented in Figure 3.4. It occupies the area to the north and east of (but does not include) Suva, the capital. The province's population, at the last census in 2007, was 160,759, making Naitasiri the country's second-largest populated province (Fiji Bureau of Statistics, 2007). The village is approximately 100 km from Suva city.

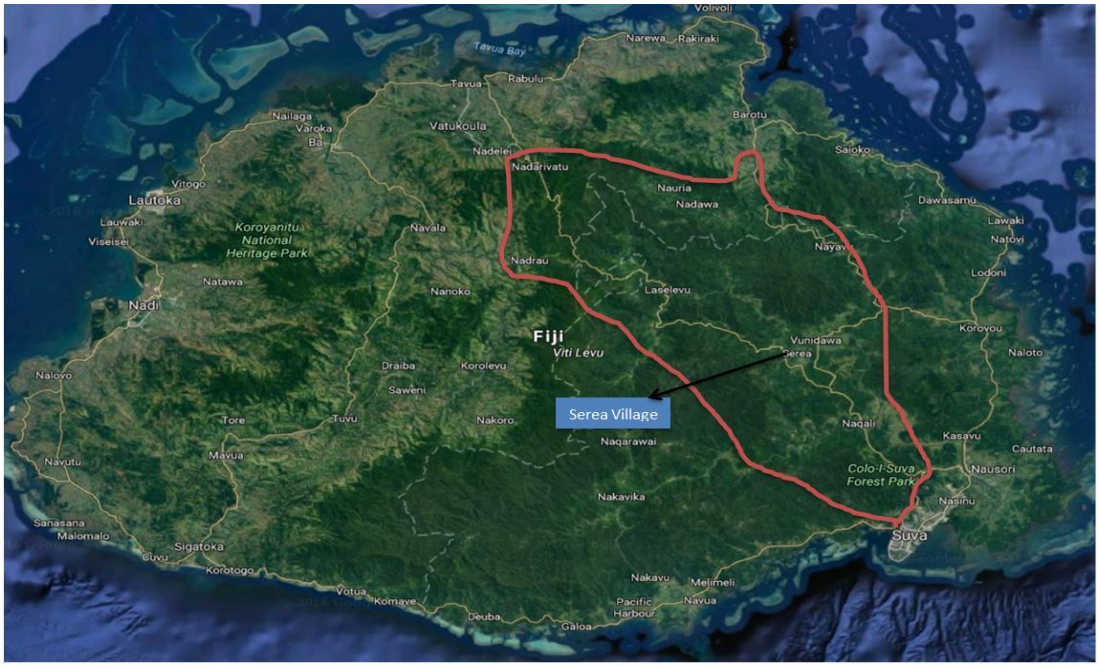

Figure 3-4. A map of study location

3.3.3 Participant Selection and Sample Size

A total of 139 men and women aged 18 years and above live in the chosen Serea village, as per local district health nurse records. In this survey a total of 106 participants completed the questionnaire. This indicated that 76% of the participants effectively responded and completed the survey.

In the qualitative phase a total of 14 participants with BMI greater than 30 were recruited purposively from the survey population. The adequacy of the sample size in a qualitative study using interview methods is significant, since an inadequate sample can sabotage the credibility of the research outcomes (Creswell, 2013). The adequacy of the sample size depends on the aim and design of the study, as well as the sampling methods employed in selecting participants (Onwuegbuzie & Leech, 2007). Patton (1990), recommends a sample size of between six and 10 is appropriate for the study of participants utilising a purposive sampling method.

3.4 PHASES OF THE RESEARCH DESIGN

The research design is divided into three phases that took place in the field within two years. These phases are:

- Phase 1. Applying a community-based approach, which included partnership engagement, determining the research question, negotiating the research question, establishing the research team, and conducting the literature review.
- Phase 2. Gaining ethics approval, data collection for the health survey of the community, analysis of the survey, preliminary dissemination of the survey findings, initiating community intervention, and thereafter, conducting semistructured interviews.

- Phase 3. Analysis of the interviews, dissemination of interview findings, and receiving suggestions from the community, as illustrated in Figure 3.5.

3.5 PHASE 1: PARTNERSHIP FORMATION AND DATA COLLECTION INSTRUMENTS

I arrived in Fiji on 10 August 2013 and met with Ministry of Health (MOH) Director of Wellness and Prevention, Dr Israeli Tukana, the subdivisional medical officer (SDMO), Dr Coleen, and the subdivisional charge nurse (SDCN), Natasiri district, Anna Kalokalo. on 12 August 2013. I was known to the SDCN from a period of working in Fiji in the same district. I was familiar with the district from previous employment in Fiji as a registered nurse. I approached the stakeholders Fiji MOH, SDMO, SDCN, (see Appendix B) and the community members to form a collegial skill team and build a partnership.

Horowitz, et al. (2009) discovered that when developing teams, researchers must supplement their scientific skills with humility, patience, curiosity, interpersonal skills, and the abilities to mentor, inspire, share control, empower, and prioritise on community concerns. For this reason, I developed a partnership with the local SDMO and SDCN, purposefully selecting the iTaukei village as the community partner. The iTaukei village was approached by the SDMO in a traditional ceremony called *Sevusevu* for the customary presentation of kava (a plant with a mild tranquiliser content) to the influential members of the iTaukei community, namely, the village chief and the spokesperson of the village (*Turaga ni koro*), to build a partnership in the current research. By accepting the *Sevusevu*, the village chief

representatively accepted the researcher and the SDMO's offer and offered protection and hospitality in the village (Shaver & Sosis, 2014). A village meeting was called on the same evening by the village chief.

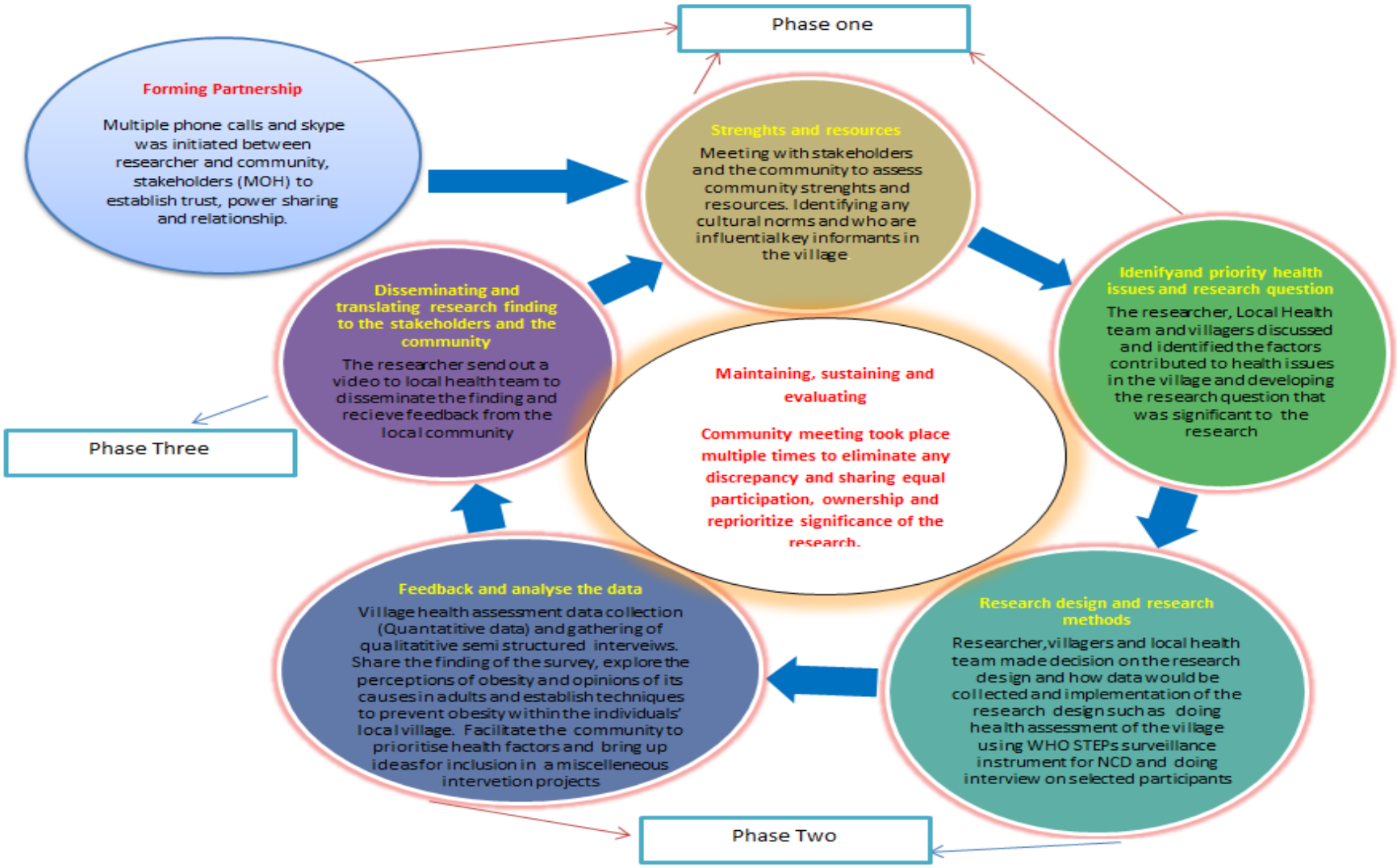

Figure 3-5. Phases of CBPR in this research.

The meeting, which took place in a village community hall at 8 pm, included males and females and had no age limit for participants. A brief introduction was carried out by the chief, explaining the purpose for the visit of the researcher and the health department. As the research team was already known to the village community, trust was quickly formed.

The village was addressed by the local SDMO who spoke of the increasing rate of NCDs across the district and this was alarming (anecdotal local data was presented) for the upcoming young generation. The address encouraged the engagement of the iTaukei community and local health department and supported the sharing of information on local specific norms and resources targeted the health of the community with the researcher. This guided a shared vision of community engagement and began the development of the research aims and design with the participating village. The village was informed about the shared risks and advantages of being part of the study and the majority of individuals present gave verbal consent to engage in the research. The community and research team discussed the time frame for the research to start and a venue for data collection as detailed later in this chapter. The community was informed about the policy and procedures for gaining ethical approval from the hosting university, a time-consuming process, and one which was ultimately accepted by both partners. In this way, community engagement allowed the researcher to gain a better understanding of the community and aided in developing a rich research design and eliminating health disparities in the community. Fassinger and Morrow (2013) emphasised the importance of viewing social

research as a relational activity, as well as respectfully making contact and connecting with participants.

Lyons et al. (2013) suggest building relationships with key leaders (e.g., village chiefs), who already have the trust of the community, in the early stages of planning the study, and using those connections to learn about and gain access to the community. In this research, with the researcher already genuinely engaged in and an active ally of the community before (and following) the study, this helped reduce the perception and possibility of exploitation. Further, it helped build trust and produce high-quality research through the acquisition of tacit knowledge within the context of the people the researcher wished to study. Israel, et al. (2011) state that the partnerships should have members who represent all spectrums of the community including members of various age, race, ethnicity, gender, socioeconomic status, and levels of power in a community, and those who have a particular interest or an expertise relevant to the chosen topic or focus. In the current study, the researcher was able to have transparent communication and build trust with key community leaders to develop vision and fieldwork procedures that supported effective collaborations. This promoted shared decision-making and community engagement in the research, ensuring partners had equal power for making decisions and planning all activities (Datta, 2013). For that reason, the researcher maintained regular contact with the stakeholders and village chief, via Skype and telephone calls, to keep up the momentum of the research. The researcher developed trust to ensure successful collaboration and open communication and to keep the village

informed during the time-consuming process of gaining ethics approval from the university, a crucial step before data collection.

3.5.1 Data Collection Design

To understand the complex socio-cultural environment within which this study was conducted, the researcher implemented a sequential explanatory method. When investigating Indigenous social and cultural phenomenon, it is most fruitful to use a diversity of methods when gathering data, as this is believed to improve the reliability and trustworthiness of the study (Creswell & Clark, 2011). This multimethod paradigm is best suited for this research because neither quantitative nor qualitative methods alone are adequate to answer the research. However, when used in combination, the quantitative and qualitative methods complement each other and generate a more comprehensive analysis. In addition, a mixed methods design can neutralise or cancel out the shortcomings of one particular method and, thus, strengthen the research (Creswell & Clark, 2011).

A number of reasons explain the superiority of the mixed methods approach:

- It can answer a broader and more complete range of research questions because the researcher is not confined to a single method.
- It provides better and stronger inferences.
- It gives the opportunity to present diverse views, appropriately.

- It can provide stronger evidence for a conclusion through the convergence and corroboration of the finding. (Creswell, 2013; Johnson, Onwuegbuzie, & Turner, 2007)

There are a number of mixed methods designs available to a researcher. In selecting a design that combines both quantitative and qualitative (contextual) methods, the researcher considered three important criteria: priority, implementation, and integration.

1. Priority refers to emphasis. The researcher emphasises either the quantitative or the qualitative data, or both.
2. Implementation refers to whether the quantitative or qualitative data are collected in a sequential manner or concurrently.
3. Integration, or mixing, relates to the point in the process of research where the researcher mixes or integrates the quantitative and qualitative data. This can occur at a number of places, for example, during the data collection, the data analysis, or the interpretation section (Creswell & Clark, 2011, pp. 88-95).

In this research, the criteria of priority, implementation, and integration are organised as follows:

- Priority was given to the qualitative phase because it represents the major aspect of data collection and analysis.
- Implementation was sequential because the quantitative phase followed the qualitative phase.
- Integration took place during the health assessment survey, the intervention process, and the data disseminating process.

3.5.2 Sequential Explanatory Mixed Method Design and the iTaukei Research

It is also important to acknowledge that the entire research methodology cannot be directed via the CBPR process alone. CBPR is not a method per se (Israel, et al., 2013) but an 'orientation to inquiry' (Bradshaw et al., 2007; Minkler & Wallerstein, 2010). Consequently, published research examples of CBPR show a wide usage of mixed methods, qualitative, and quantitative research methods in answering research questions and do not rely on only one method. In addition, a variety of inquiry approaches within a research project can result in greater participatory responses in the research, and hence, should not be considered as a weakness (Kindon, Pain, & Kesby, 2008).

Following the review of a number of mixed methods designs, Creswell (2013) sequential explanatory mixed design (visual diagram demonstrated in Figure 3.6) was chosen because:

- The sequential explanatory design provides an opportunity for the researcher to purposefully select participants from a quantitative phase and elaborate its results in the subsequent follow-up phase using qualitative methods (Creswell, 2013).
- For a single researcher, it is easy to implement because it proceeds sequentially from one stage to another.
- A sequential explanatory result is useful for exploring qualitative results in more detail.

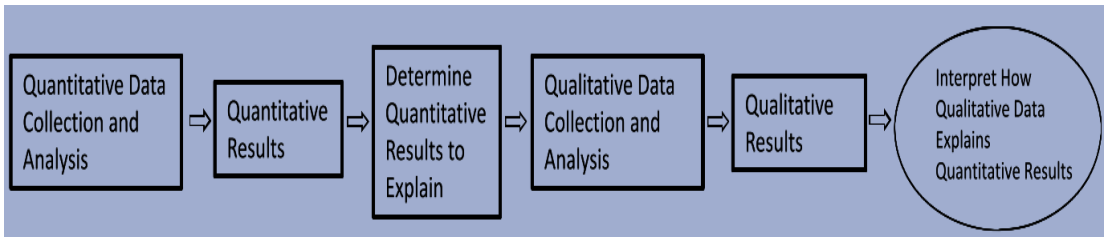

Figure 3-6. Sequential explanatory design.

3.6 PHASE 2: PROCEDURE AND TIMELINE

3.6.1 Schema of Quantitative Survey

The quantitative statistics were to provide evidence to answer the research questions, and to inform the health status of the community such as: 'How many?', 'Who was involved?', and 'What were the outcomes?' (Creswell, 2013). The WHO STEPs survey tools and anthropometric measurements were developed to understand behavioural lifestyle choices and the risk factors for obesity in the community. The data collection is described in detail in the data collection section 4.7.4 of this doctoral thesis. The researcher collected several measures from each participant, including demographic information and health status. Aarons, et al. (2012) stated that the quantitative data calculates the depth and breadth of the research implementation, such as the number of participants and the number of people who completed the study.

According to Reeves et al. (2010), the strength of the quantitative data is in determining generalisability and reliability, ensuring that the sample is representative of the population, providing simplicity of analysis, and in ensuring consistency and precision of the data (Reeves, et al., 2010). Quantitative data will not provide an understanding of the participants'

viewpoints, nor is it vigorous enough to demonstrate complex concerns or collaborations (Garbarino & Holland, 2009).

3.6.2 Conducting the Village Health Survey

The WHO STEPS manual guided the process of planning and preparing the village survey and environment; familiarising for data collection, data entry, and data analysis; conducting the STEPs survey; capturing and analysing the data that was collected; and finally reporting and disseminating the survey findings. The WHO website describes a methodical STEPs manual, which can be found at http://www.who.int/chp/steps/manual/en/index.html.

To conduct the research, the local health centre SDCN approached community health nurses to participate in data collection and familiarise them with the survey tool. A brief in-service training was conducted with the community health nurses and dietician before data collection, to educate and standardise interviewing and data collection methods to erase inconsistencies during the research. The WHO STEPs surveillance tool was utilised for this research. STEPs is an easy, universal technique for obtaining, analysing, and disseminating results in low- and middle-income countries (World Health Organization, 2011b). The WHO STEPs tool was developed to measure risk factors for NCDs among adults in low- and middle-income countries and supports researchers to determine a baseline along which risk factors in the community are measured and trended (Bonita, 2009). This STEPS tool was developed to cover three different phases or STEPs of risk factor assessment:

- STEP 1 entails collecting demographical and lifestyle risk factor information by questionnaire
- STEP 2 involves gathering anthropometric measurements of participants and simple investigations in a community setting
- STEP 3 entails collecting blood specimens for lipids test.

In 2005 the WHO STEPs tool was revised and each tool now incorporates three stages of data gathering: core, expanded, and optional. This was done due to the availability of resources in each country (World Health Organization, 2011b). The WHO STEPs tool has been validated in a standardised manner in 77 countries including the Fiji islands (Bonita, 2009).

The WHO STEPs tool has been used in this research to gather data and measure the health characteristics of the village. The Pacific regional standardised form of the WHO STEPs questionnaire was used in the research. The STEPs tool was established by the Asia–Pacific WHO regional office and was custom-made according to the Fiji context (Appendix C).

The STEPs tools that were used in this research cover two different steps for risk factor assessment: Step 1 and Step 2 are demonstrated in Figure 3.6. Within each step were three levels of data gathering: core, expanded, and optional, although more questions were added later to gather further details about kava/Yogona intake habits.

The WHO STEPs tools were used based on the WHO manual kit to collect data and additional show cards were included in the survey to describe the meaning of some items, which were shown to the participants (see Appendix C).

In this research, the core and expanded levels of data collected in each step are briefly defined in Figure 3.7. The data gathering process was conducted over five days, from 19 November 2014 to 24 November 2014. Local radio supported the programme through public news broadcasting in English and iTaukei language for village health check day, and village announcements were made by the village spokesman twice a day, between 10 am and 6 pm.

Step	Description	Purpose
1	Collecting demographic information and behavioural measurements of an individual in a village setting	To achieve core data on: • Sociodemographic data • Tobacco use • Alcohol consumption • Nutritional intake • Physical activity
2	Gathering anthropometric data of participants and simple investigations in a community setting	To scaffold on the core data in Step 1 and determine the ratio of adults who have: • History of increased blood pressure • History of diabetes • Overweight/obese

Figure 3-7. WHO STEPs tool.

Step	Core	Expanded
1	• Basic demographic details including sex, age, and years at school • Tobacco use • Alcohol consumption • Types of physical activity • Sedentary lifestyle • Intake of fruits and vegetables	• Expanded demographic data details such as employment and level of education • History of tobacco use • Smokeless tobacco use • Oil and fat intake • History of hypertension • History of diabetes • Kava/Yogona intake
2	• Blood pressure • Waist circumference • Height and weight	• Hip circumference

Figure 3-8. WHO STEPs core and expanded levels.

The research team conducted the survey between 1100 am to 10 pm each weekday, in the village community hall provided by the village. A clear relationship was forged between the research team members and this prevented confusion and overlapping and ensured full participation from each team member. One nurse conducted the anthropometric measurement, and four other team members completed the STEPs tool and blood pressure measurement simultaneously.

3.6.3 Instruments Used for Anthropometric Measurement

Blood pressure measurement

Blood pressure, including both diastolic and systolic, was gathered using equipment recommended by the WHO manual (see Appendix C). Omron BP785 digital blood pressure equipment was used by the registered nurses who were part of the research team. The research team demonstrated how to use the equipment during the training phase. The

equipment was calibrated daily, and the battery was changed regularly. The blood pressure was taken while the participants were sitting quietly, as recommended in the WHO manual. The cuff was wrapped around the right arm of the participants, securely tightened with the lower edge two centimetres from the antecubital fold and using the correct cuff size depending on arm size. The blood pressure was repeated three times and recorded. The blood pressure recorded was achieved by taking the average mean of the second and third measurement for each participant.

Weight measurement

An electronic floor scale was used to measure the weight, as recommended in the WHO manual (see Appendix C). The scale was calibrated on a daily basis using the known weight. Based on the manual, the electronic scale was placed on a firm, flat surface, and the participants were dressed in light clothes, barefoot, facing forward, and standing gently. All nurses were trained to use the electronic scale consistently.

Height measurement

The height of participants was taken to help calculate their body mass index (BMI). The height was measured using the Seca height measurement equipment, as recommended in the WHO manual. Based on the WHO manual, the measurements were conducted by having the respondents stand with their back against the wall, both feet together, and their head in the Frankfort position. The measuring stick was stirred down and positioned on top of the head and height was recorded to the nearest centimetre.

Waist circumference measurement

A measuring tape was used to measure waist circumference according to the recommendations of the WHO manual kit. The measurement was taken from the mid-axillary line midway between the last rib cage and the above iliac crest, while the measuring tape was placed horizontally across the back. The measurement was conducted to the nearest 0.1 centimetres by the trained registered nurses (RNs).

Hip circumference measurement

The hip measurements were done with both arms placed comfortably at the sides and the maximum circumference over the gluteal region was measured. This procedure took place over light garments straight after the waist circumference measurement was taken. The measurement was conducted to the nearest 0.1 centimetres by the trained nurses. The measuring tape used was as recommended in the WHO manual kit.

3.6.4 Descriptive Quantitative Data Analysis

Data was analysed using Statistical Product and Service Solutions (SPSS) version 22 statistical software and resulted in the production of descriptive analysis. The data was cleaned correctly, and the missing variables were rechecked and corrected. The researcher collaborated with an expert statistician, Sabiha Khan, at Ministry of Health (Fiji), who had been referred by the Director of Health Promotion Dr Isimeli Tukana.

The descriptive analyses used were frequency and percentage. A complete picture of the quantitative data analysis is given in the findings chapter (Chapter 5). From the data analysed, I was able to purposefully identify participants with BMI greater than 30 for the semistructured

interviews. Obesity was determined using the WHO definition where BMI is greater than or equal to 30 (see Appendix A) (World Health Organization, 2011b). I developed graphs and simple numerical data, which were discussed with the village for the purpose of developing intervention (see Appendix D).

3.6.5 Dissemination of Preliminary Survey Results and Development of the Initial Intervention

The meeting held with the community members was conducted in two parts with a break of 20 minutes in the middle as per Figure 3.10. The meeting was held in the village community hall on 18 December 2014 at 8 am. The meeting participants were local health officials, the executive head of the district (Roko Tui), and local villagers. The spokesman of the village informed the community about the meeting twice, once at 8 am and at 6 pm. The meeting had 83 participants.

The first part of the meeting was devoted to disseminating the survey's findings, discussing perceptions of obesity, and hearing the community's opinion on what causes obesity in adults. Recommendations of possible methods to reduce obesity in the villages were also shared.

The results of the data analysis were explained to the participants by the researcher in simple English and via a PowerPoint presentation, displaying graphs and charts (see Appendix D). One of the main conclusions of the research was the high level of obesity in the village community as derived from the village health assessment data, and the research team highlighted this.

The meeting participants were asked to advise what they perceived to be the key factors that attributed to obesity rates in the village. These key factors were noted on newsprint paper, and small discussion groups were formed to exchange ideas on each of these factors. The research team guided the conversation towards obesity during the meeting, as they found otherwise participants were not discussing the topic of obesity but diverting to other topics.

Participants were invited to write individually, on sticky notepaper, how they felt obesity rates could be reduced in their village. Then these individual opinions were shared within the groups and recorded on the newsprint.

The second half of the community meeting aimed to see if obesity prevention was a priority issue in the community, and to translate the concerns into an intervention programme that was specific, measurable, achievable, realistic, and timely (SMART). First, the meeting participants discussed what they believed were suitable intervention strategies, and second, they identified which were the most popular ideas. Four interventions were noted based on the discussions. These were:

1. Educating the community on healthy eating, facilitated by a local dietician.
2. Walking groups for men and women.
3. A second playground for men and women to conduct healthy physical activity.
4. The construction of a village fitness gym.

The newsprint was divided into four parts, according to the four proposed interventions, and evaluated by the participants. The evaluation

was conducted in three steps. Firstly, those responses that were perceived to be both effective and realistic were highlighted. Then participants were supplied with colour-coded self-adhesive labels. Red signified very important, blue represented somewhat important, and green meant not very important. These labels were then used by participants to rate each intervention.

Based on this voting system, it was determined that a second playground for men and women was the most popular option selected by the community. The village clan leader (*Mataqali*) agreed to donate the land required for this intervention. The *Mataqali* said the donation was for a personal reason, as his wife had suffered from obesity and diabetes, which ultimately led to her having a below-the-knee amputation. He went on to explain that village tradition such as *Vakaturaga* (ideal behaviour) states that married women should abstain from any form of physical activity, and this led to high obesity rates. The voluntary initiative to build the playground was undertaken by the village youth club since the resources required were locally available. Community discussions are outlined in Figure 9.

Each part of the community meeting lasted for one hour. Conversations were recorded and transcribed, and the researcher reviewed the transcripts to ensure their accuracy. If required, the researcher revisited the voice recordings and amended the transcripts. The voice recordings were primarily in the English language, with some words in the iTaukei language, and the researcher translated these into English.

3.6.6 Implementation of the Intervention by the iTaukei Village

The development of the intervention, the playground, took place on 20 December 2014. The intervention was implemented in collaboration with the

village members and took into consideration the local culture, village-supported practices, perspectives, and the environment. The thoughtful process involved in the implementation, and sensitivity to the various socio-cultural context issues, was particularly significant for sustaining a social change outcome in the iTaukei village. Therefore, iTaukei youth club members cleared the ground, which was about 500 metres away from the village. The cleaning of bushland was very intense manual work and required the use of knives to clear the jungle area. A volleyball court was erected using two posts and the research team donated the equipment, which consisted of netting and ball (Figure 3.9). Importantly, the researcher instigated fortnightly follow-up meetings with the SDCN via telephone and SMS. The research had real-world outcomes as it was well supported through the collaboration of stakeholders and the community engagement process.

Figure 3-9. A volleyball court (Photo supplied by village health worker.)

Period 1: Aims	Period 2: Aims
• **To share the findings of the survey,** • **To explore the perceptions of obesity and opinions of its causes in adults (in local settings)** • **To establish techniques to prevent obesity within the individuals' local village.**	• **To facilitate the community to prioritize obesity prevention to maintain healthy lifestyle ideas for developing specific, measurable, achievable, realistic and timely (SMART) intervention program.**
Period 1: Method **I. Obesity and overweight in iTaukei adults: is it a dilemma?** ***Identify obesity and overweight, and pertain issues/ benefits. Examine certain perceptions of adult obesity and overweight.*** ○ **Physical activity: "Note down on the sticky paper what are the meanings of overweight and obesity that came into your thoughts."** ○ **Share your thoughts on the newsprint and identify** **II. Elements are causing obesity and overweight in iTaukei adults.** ***Facilitating participants to consider the elements that cause obesity in their local environments.*** ○ **Identify the reason why iTaukei adults are becoming obese and overweight (probing questions in outlining poor staple food and lack of physical activity).** ○ **Why is adult obesity burgeoning?** ○ **Tell about your own understanding that effects adult staples and physical activity** **III. Preventing obesity in iTaukei adults.** ***Empower adults to taken actions to maintain healthy weights in rural obesogenic environment context.*** ○ **Encourage community to consider what steps to take that will empower the iTaukei people to live a healthy lifestyle.** ○ **Giving out newsprints, sticky notepads and jot down their views and perceptions.** ○ **Start a dialogue with the people in the community hall, share views and perceptions and write them on the newsprints paper. Identify;** ▪ **Enablers and hurdles to applying locally** ▪ **Compare other concepts and interventions used in the rural of iTaukei villagers.** ▪ **Discuss your own perceptions that will empower lifestyle changes.** ▪ **Discuss how as a community might be involved in implementing change.**	**Period 2: Method** **I. Summarize on intervention that was suggested before the break.** *Stick the newsprint sheet on the wall with all the interventions discussed before.* ○ Does the community agree that the summary is illustrative of the community discussion? ○ Discuss if participants have any further ideas. **II. Discuss the interventions suggested by the community.** *Elaborate in detail of the intervention that was suggested.* ○ Encourage participants to elaborate on the intervention elements recognized by the community and how these pertain to individuals views. **III. Prioritization process.** *The community has to prioritize all the views identified step by step process in sequence of stages as far as they reach with a singular idea to proceed with SMART (specific, measurable, achievable, realistic and timely) intervention program* ***Stage 1*** ▪ Facilitate individuals to dialogue amongst themselves of which interventions is significant and effective to tackle obesity in iTaukei community. ▪ Transfer the views from the initial newsprint paper to another to show the extreme important as instructed by the community. ***Stage 2*** ▪ Facilitate community to reconsider the SMART intervention that can be implemented with existing resources available in the local community. Provide three different sticky labels (red, blue and green) ***Stage 3*** ▪ Request participants to apply the sticky labels on to the extreme important intervention element. ▪ Facilitate the community to reflect on the final intervention and how to carry out the intervention in a cost-effective manner using local resources.

Figure 3-10. Researcher's journal for first and second period of the community meeting.

3.6.7 Reliability and Validity of Quantitative Research

The quality standards were assessed for the quantitative method. This study was judged by the criteria of reliability and validity (Denscombe, 2014). In the current research the quality of the quantitative methods and tools used in the survey were examined for reliability and validity.

Validity is the factual reflection of the authenticity, rather than the findings of the properties of insignificant variables (Creswell, 2013). Creswell and Clark (2011) described the risks, which are most likely to interrelate with selection are history, maturation, and instrumentation changes. Lincoln and Guba (1985), highlight that the risks to validity must be removed if research is to have validity. In this research, during the village health assessment, the WHO STEPs survey tool was used. The STEPs tool was widely used in the South Pacific region and validated in year 2011 in Fiji during the country NCD profile project conducted by WHO. However, the data was analysed and presented to the community for validation and reliability. Validity and reliability was conducted, which means the survey data collected from the participants are consistent and meaningful to the participants and the researcher. Ministry of Health (Fiji) statistician and doctoral supervisors assessed the reliability of data.

Maturation and mortality are recognised as risks to validity. During this doctoral study, maturation could be seen as a risk as I began this research in February 2013 and was residing at a distance in Queensland. As the researcher, I did not have any control over the community activities; participants would drop out of the study and consequently a risk of research participant mortality existed. Regular contact with the elders of the village and

weekly Skype or phone calls to the district nurse was set up to reduce the likelihood of this happening. In reality, not everyone from the village was able to participate. However, most villagers participated in all phases of the village meeting.

3.6.8 Schema of Qualitative Methods

Qualitative research is described as any research on people's lived experience, chronicles, or behaviour (Denzin & Lincoln, 2011). Creswell (2013) discussed five characteristics of qualitative research. These are:

- The story and lived experience are studied from the participants' perspective.
- During data collection, the researcher is a vital instrument.
- It generally encompasses fieldwork.
- It primarily involves inductive thinking.
- The research develops richly descriptive. (Creswell, 2013, pp. 174-175)

During qualitative research, the understanding of the issue is developed by gaining a detailed view of key participants which, when gathered and analysed, provides a multifaceted, holistic representation that is then interpreted in words. Such metaphors represent the research participant's fact; it explores their life experience and their situation, as it is seen in the real world (Garbarino & Holland, 2009). Qualitative research is also referred to as an *emergent design* because the researcher explores into areas, which are not understood from the beginning, and which became vibrant as the research evolves (Denzin & Lincoln, 1994). This doctoral research used

qualitative research during Phase 2 and the dissemination member-checking Phase 3.

The strengths of qualitative research pertain to its ability to provide contextual data to illuminate the complex issues and to complement the quantitative data to explain the 'why' and 'how' behind the 'what' (Martin & Hanington, 2012). The contextual data is able to answer research questions such as: 'what is the value added?', 'who was responsible?', and 'what happened?' (Garbarino & Holland, 2009).

The aim of this doctoral research was to study contextually both being a researcher on a CBPR study and advocating for community partners to gain empowerment during the research. Therefore, as the researcher, I made the decision to use a qualitative approach because of the exploratory nature of the research questions in this study. Qualitative research is well recognised as a method that is valuable to use with marginalised and low-income populations, such as the iTaukei people living in rural areas of Fiji (Garbarino & Holland, 2009).

Garbarino and Holland (2009) highlights the vulnerability in eliminating individuals from lower-income backgrounds in research when methods do not include the population or the research questions. Qualitative methods allow for developing and nurturing rapport between researcher and respondents, which enhances the richness of the data. While the researcher considered that the utilisation of qualitative approach was the accurate decision because it highlights the insights of Indigenous participants as valuable and reliable (Greene, 2008), the researcher is aware that it is vital to uphold scientific rigor while applying the best methods for the participants in a research

(Garbarino & Holland, 2009; Greene, 2008). Therefore, researchers believe that quality metaphors that strive to capture participants' lived experience are significant in relation to this study paradigm.

The researcher identified as a critical theorist where he believes CBPR with iTaukei communities' in rural villages with low income will certainly not be fully understood, since the perspective and lens through which the researcher looks at this study is always necessary and always changing. There are individual beliefs, and social, political, and lived experiences in which this research is positioned in the researcher's life as well as in the lives of the iTaukei community in rural villages. This research is extraordinary, and all of those repercussions need to be considered as significant for readers to understand and utilise the benefits of this research. The researcher has faith in applying thorough characteristics of a CBPR that benefits and fosters empowerment, and which can be useful for people to utilise CBPR in the near future to continue partnership after the research is completed (Denzin & Lincoln, 2011).

A community researcher tirelessly aims towards the goals of improving community wellbeing and understanding the development and advantages of community empowerment. This collaborative effort is an attempt to build community empowerment (Frank, et al., 2004; Franz, Worrell, & Vögele, 2013; Hills & Mullett, 2000). To target the diversity of the description and advantages of complex perceptions, it has been recommended that a study uses diverse approaches (Harrits, 2011; Hatch, Moss, Saran, & Presley-Cantrell, 1993; Hayashi et al., 2012). According to Rapley (2003), 'the exact placement of an utterance, as well as its phrasing, affects meaning'. The

significance and meaning of dialogue, therefore, vanishes when content analyses are the means by which words are assumed (Rapley, 2003). This is referred as understanding the cultural connection of communities through a qualitative approach, as mentioned in community psychology, and pertains to the current emphasis on qualitative approaches by CBPR researchers to build a better understanding of the experiences of a marginalised community (Vakalahi, 2011; Wallerstein & Bernstein, 1994; Wilmsen, 2005). The qualitative research method is a way to culturally understand an individual's life experiences and is also useful as an 'empowerment instrument' (Igboanugo & Martin, 2011; Wallerstein & Duran, 2006). Community and academic coalitions utilise narratives, the community, and their collective community uniqueness to uphold positive collaboration and bring positive social change (Fassinger & Morrow, 2013; Tse, et al., 2006; Tse, et al., 2011). The researcher highlights that using a qualitative approach is significant to address research questions for this study to allow a full story to be discovered. Denzin and Lincoln (2011) describe the purpose of the qualitative approach as a significant conversation the social sciences are endeavouring to have about community.

3.6.9 Conducting Qualitative Data Collection

In this research, qualitative data collection was conducted after the findings of descriptive quantitative data. Data collection is described as the collection of information which is significant to the research problem (Creswell, 2013). Data collection is a method of collecting the significant information that will explain to the researcher more than the researcher usually knows.

The approach of collecting data for this research included:

- Step 1: Formation of partnership with communities and stakeholders, identifying health issues in the local community, and developing the research question.
- Step 2: A literature search was conducted, and document analysis was carried out to create a theoretical framework of the literature and find any gaps.
- Step 3: A semistructured interview questionnaire was developed based on the literature review results and community health survey.
- Step 4: Document collection and purposeful selection of audio recordings of key informant interviews was conducted. (During which I ensured plenty of spare batteries and an additional audio recorder was at hand.) All interviews were recorded using a personal smartphone app and mini-audio to ensure the accuracy of recording. The researcher made journal entries from the start of the research to the end of the research process.
- Step 5: The interviews and researcher journal were transcribed by a professional transcription freelancer who had previously signed the Queensland University of Technology privacy form.
- Step 6: Supervisors who were involved in the research gave feedback on the various stages of transcript editing.
- Step 7: The transcript was manually analysed, final themes were developed, and the recommendations were written.

This research focuses on the individual interviews that were recorded between 18 December 2014 and 20 December 2014. (The semistructured questions with prompting questions about the participants' perceptions regarding food intake, physical activity, NCDs, socio-cultural factors, and obesity are presented in Appendix E.) According to Patton (2011), semistructured interviews can be constructed upon participants' values, beliefs, behaviour, intellectual experiences, demographic background, life experience, emotional feelings, and knowledge.

The anonymity of participants was maintained by giving each participant a numeric code, and their comments were identifiable using their code number, for example, participant 1 and so on. The objective of the data collection stage was to reach the data saturation point. Data saturation occurs when researchers are not obtaining any new information from their sample size (Creswell & Clark, 2011). That is, the data reaches a point where participants are not providing any more new information or raising any new issues.

According to Collumbien, Busza, Cleland, and Campbell (2012), interviews may be conducted with individuals alone or in groups; they may be especially useful for exploring complex or sensitive issues such as obesity. The length of each interview ranged from 25 to 30 minutes, and they took place in the participant's home environment in the village. The interviews were audio recorded using voice recorders. Audio recordings were transcribed verbatim and the researcher revised transcripts to assess the accuracy (as discussed in Step 6 above). Where required, the researcher referred to the audio recording and amended transcriptions as necessary.

3.6.10 Qualitative Data Analysis

The above section examined key features of qualitative data collection methods. This section will discuss the different methods carried out during contextual analysis. Lacey and Luff (2007) state there is no one correct way to analyse contextual data, and many methods exist. Lacey and Luff also believe that several contextual analyses fall under the broad heading of 'thematic analysis' (Lacey & Luff, 2007, p. 9). However, there are specific conceptual steps or methods to qualitative analysis, which are significant for developing this doctoral research, and to critically review any qualitative inquiry evidence. To choose a particular method, several factors are taken into consideration. These are the research question, the time the researcher had available, and the purpose of the analysis (Onwuegbuzie & Leech, 2007). Therefore, in this project, I started to synthesise and question what value the data would add to this study, for example, answering precise socio-cultural factors related to obesity.

The goal of this section of the thesis is to discuss the conceptual method of framework analysis, a method that is often utilised in health-related studies (Tashakkori & Teddlie, 2010) and that was designed in the context of applied research (Barnett-Page & Thomas, 2009). Lacey and Luff (2007) mentioned that applied research goals were to meet precise information requirements and to enable a researcher to produce findings and suggestions within a short time frame. Lacy and Luff state that the advantage of framework analysis is that it provides structured and clear steps to the analysis technique so that readers have a clear description of the steps applied and by which the findings have been gathered from the data.

Additionally, the general method in ‘framework analysis is inductive, [and] this form of analysis allows for the inclusion of a priori as well as emergent concepts, for example in coding’ (Lacey & Luff, 2007, p. 13). Spencer, Ritchie, Lewis, and Dillon (2003) suggest this will be significant in several applied research situations where there are unique issues that the community want to be addressed.

Spencer and colleagues described four important viewpoints that reinforce the content of framework analysis. Most are constructed from the themes that are most frequent in the interviews obtained in the research and/or from the literature. These viewpoints were previously addressed in this chapter. They described that the study should be:

- ***Contributory*** in evolving broader knowledge or understanding about policy, practice, philosophy or a particular fundamental field
- ***Defensible in design*** by maintaining a research approach that can address the research questions posed
- ***Rigorous in conduct*** through the methodical and transparent gathering, analyzing and interpretation of qualitative data
- ***Credible in the claim*** through offering well-founded and logical arguments about the importance of the theme produced. (Spencer, et al., 2003, p. 7)

Lacey and Luff (2007) state that framework analysis may be undertaken in a linear way, and consequently, all data can be gathered prior to analysis, although framework analysis may also be employed during data gathering and while analysis takes place sequentially. Seven of the nine journal articles

were based on five steps of data analysis by Lacey and Luff (2007, pp. 19-45). Further essential sources of information came from Canales (2013), Onwuegbuzie and Teddlie (2003), Denzin and Lincoln (2011), Creswell (2013), Cresswell (1994), Ritchie, Lewis, Nicholls, and Ormston (2013), and Spencer, et al. (2003) suggested, informed the steps in the process of data analysis.

While several authors used different labels, the procedure of data analysis by all authors was similar. Therefore the five key steps of the framework analysis method from Lacey and Luff (2007) were adopted, and this guided the practical component of my data analysis. These five key steps and the practical process are described below.

Step 1: Familiarisation – Reading of the data from the transcription (Lacey & Luff, 2007). This helped the researcher to note visible trends and to seek any patterns in the responses (Creswell, 2013; Onwuegbuzie & Leech, 2007; Patton, 2011).

Step 2: Establishing a thematic framework – 'It is the preliminary coding framework that is established both from priori issues and from evolving issues from the familiarisation step. This thematic framework should be developed and refined during subsequent stages' (Lacey & Luff, 2007). The process of identifying the framework for this doctoral research was guided by the research question and the richness of the data. An analysis grid for environments linked to obesity framework (the ANGELO framework) was employed. This framework was developed by Swinburn and colleagues (Swinburn, Egger, & Raza, 1999; Swinburn et al., 2007) and guides the researcher to categorize that which is identified as 'obesogenic'

environmental influenced by four major characteristics that include, physical, economic, policy/political, and socio-cultural and conceive these categories at two levels micro and macro. This grid is referred to as a 2 × 4 grid (Swinburn, Egger, & Raza, 1999) and is shown in Figure 3.11. When the ANGELO framework was applied to Pacific Island communities, researchers from the catchment area were able to apply the framework to categorise environmental impact on obesity and then prioritise this activity by conceiving elements[9] in relation to strength, significance to local community, and sustainability.

Domain	Scale	
	micro-environment *(e.g. household; community)* diet-related / activity-related	macro-environment *(e.g. regional; national)* diet-related / activity-related
Physical	What is available, for example, buildings, amenities, facilities and use patterns? Includes built environment, landscapes and internal / enclosed spaces	
Economic	What are the monetary cost factors/influences/consequences? Includes price incentives / disincentives / taxes and cost savings driven measures	
Legislative	What are the rules/legal guidance/statutory provisions/political messages? Also includes codes of conduct and acceptable standard practices / behaviours	
Socio-cultural	What are the attitudes, beliefs, perceptions and values? Also covers prevailing cultural norms at national and community levels	

Figure 3-11. ANGELO Framework as adapted from Swinburn, et al. (1999)

In addition to improving ease of data analysis, the ANGELO framework supported significant contextual factual data in developing the intervention and eliminating likely barriers to delivering the intervention to the local communities. This methodical process is recognised as an applicable approach to analysis when undertaking practical qualitative research, such

[9] Elements demonstrated that is works as evidence.

as this doctoral research, where there are predetermined aims and objectives (Pope, Ziebland, & Mays, 2000; Ritchie, et al., 2013).

Step 3: Coding – Lacey and Luff (2007) described the process of employing the 'thematic framework to the conceptual data, using numerical or textual codes to establish unambiguous sections of data that link to contradictory themes'. Transcripts underwent detailed examination and codes were used to note any similar words, phrases, or concepts. Data phrases were compared between interviews. Therefore, as many researchers suggest, to identify some words or phrases that were very common, simple tabulation needed to be used (Daigneault & Jacob, 2013; Lacey & Luff, 2007; Onwuegbuzie & Burke, 2006). Creswell (2013) described coding as a method of grouping data and labelling thoughts so that they can reflect gradually broader perceptions. 'Data from the transcripts are grouped into codes and codes are grouped into wider themes. Themes are then grouped into broader perceptions and compared' (Creswell, 2013, p. 208).

3.6.11 Practicalities of Data Analysis

While undertaking this applied doctoral research, interviews were audio recorded using a digital recorder and a smartphone (backup recording). The audio recording was later transcribed into a Microsoft Word document. Furthermore, a journal was kept where the researcher described his experience as a researcher and jotted down ideas about possible themes, questions, or concerns with the research, which needed further consideration. The journal entries were very useful during the transcription process as I referred to them to refresh my mind as necessary. Regardless of the many researchers who believe transcription is a 'task' (Saldaña, 2015), I

decided to take a different approach and took the opportunity to reflect on the experience and immerse myself in the data. Each interview was transcribed using a denaturalised technique, where language remains verbatim without specific consideration being given to utterances and silences (Clark et al., 2013). Saldaña (2015) states that qualitative researchers predominantly use this technique of transcribing when the research is mostly concerned with the significance and perceptions of participants, which are developed throughout the interviews.

After familiarising myself with the transcriptions multiple times, I proceeded to use a deductive analytical method and initially created primary codes that meshed with the established domains of the ANGELO framework. There are many descriptions of coding by qualitative researchers. However, I felt more comfortable handling the data manually, so I did not utilise the available computer software packages that manage this process electronically. I utilised Microsoft Word to cut and paste and electronically separate the transcripts, then made multiple copies for analysis. I developed phrases and sentences as leading elements, and these were arranged physically into groups and simultaneously placed electronically in the Microsoft Word document as initial coding. This enabled me to identify the data about the four types of environment. The preliminary segments were identified, and mapping was conducted using colour coding under thematic headings, such as physical, economic, policy, and socio-cultural, as demonstrated in Figure 3.12.

Interview No	Physical What is available/not available?		Economic Cost related to food and physical activity		Policy/Political Local, national and international policy related to food and Physical activity		Sociocultural Community beliefs, attitudes, values, perception and practices	
1	Descriptive codes	Transcripts	Descriptive codes	Transcripts	Descriptive codes	Transcripts	Descriptive codes	Transcripts
	Fresh vegetables Local farming Hunting for local food School compound Soft drinks	• Local vegetables planted by men of the family and consumed available such bele leaves, Taro, • River to catch fresh fish. • Drinking cold soft drinks during hot days available in local village shop. • Space for playing sports: Yes but only in the afternoon after school which is normally used by men to play rugby	More Local shop More process food availability Lack of sports gear	• Buy tin fish, chicken feet, eggs and noddles from local village store • get some of the sports aah sports gear like volleyball ball	Increase health awareness on healthy eating Aware Physical Activity(PA) is important Lack Health education by Local	• Health information's only given by Village health worker and sometimes by the district health nurse. • Local health centre no advice on reducing weight • Health authorities to give advice to us educate our village on healthy lifestyle.	Keep us healthy Body size Women doing Domestic duties	• Help us to do our work better • My mother says women needs to be big in body size don't know why. • We women have to look after the kids and cook the dinner for the family.
Interview No	Physical What is available/not available?		Economic Cost related to food and physical activity		Policy/Political Local, national and international policy related to food and Physical activity		Sociocultural Community beliefs, attitudes, values, perception and practices	
2	Descriptive codes	Transcripts	Descriptive	Transcripts	Descriptive	Transcripts	Descriptive	Transcripts

Figure 3-12. Completing the ANGELO framework.

These phrases were then individually cut and pasted onto large sheets of paper demonstrating codes, and then regrouped into broader themes. From this, it was clear to see how each phrase was traced back to its context. Also, many phrases of the data convey more than two codes; therefore, several copies of phrases were printed and utilised in numerous codes or themes. This process is demonstrated in Figure 3.13.

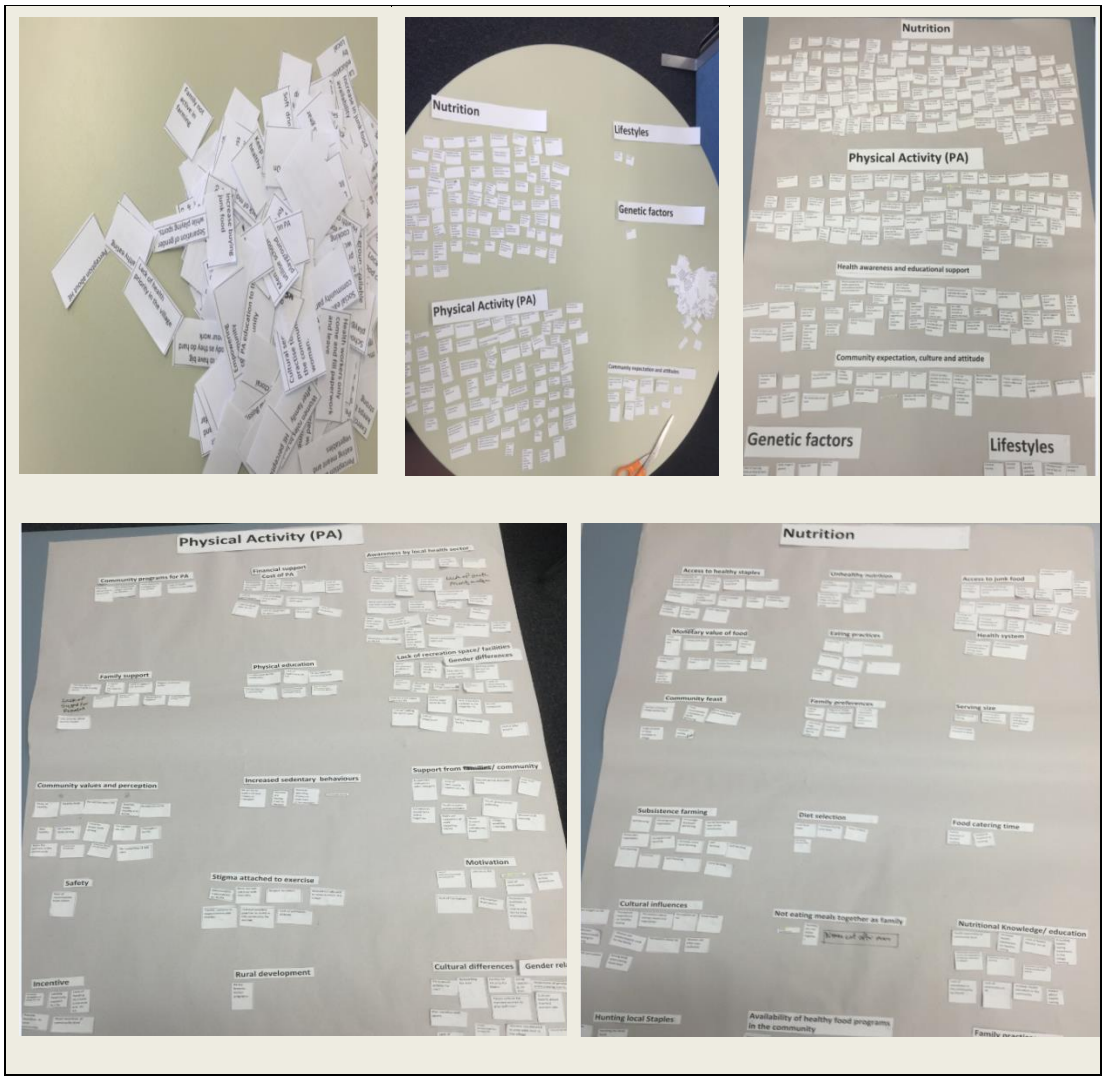

Figure 3-13. Data analysis process.

Next, I explored the developed codes to generate the ultimate themes and subthemes based on their interrelatedness. During this coding procedure, I checked to ensure the themes were consistent in relation to the primary codes and the entire dataset, and that they focused on the research question. The coding procedure was time-consuming and required multiple assessments, enabling permitted themes to be re-evaluated and redeveloped so that a logical soundness of the data was established. Additionally, I wrote journal notes of my thoughts, theories, and visual pictures throughout the

coding process. After re-examining the newly developed themes and carefully considering how they matched with each other, and with the whole dataset, I developed the final thematic map that demonstrated all developed themes and their interrelatedness. During this last step, I inserted labels under the ANGELO framework titles of categories and descriptions for the developed themes, to clearly articulate the study findings and demonstrate how they address the research objectives and question. The examples illustrated below show the data analysis procedure.

While listening to and familiarising myself with the transcription, I coloured sections of data that matched the different domains of the ANGELO framework. I primarily explored the transcriptions for codes that related to physical activity and then food intake. For example, the subsequent statements were coloured, cut, and pasted into a different Microsoft Word document using the ANGELO domains such as Physical Activity relates to Physical Environment:

- Participant 1: ‘Yes but only in the afternoon after school, which is normally used by men to play rugby.’
- Participant 1: ‘Tell them in the government meeting that they need to put a separate playground in the village plan. Not just a playground but provides us with sports equipment.’
- Participant 1: ‘So there’s no playground accessible for us during the day that at least we can do physical activity going … you know we can burn off a few kilos of fats.’

After I had read the transcript from Participant 1, two potential subthemes began to emerge under the broader theme of ‘Village Environment’. In addition to Participant 1 mentioning the inadequate facilities or space for physical activity, he/she articulated a concern about the lack of access to the playground that would help facilitate physical activity. After the potential subthemes of ‘Space for playing sports and doing physical activity’ and ‘Sports equipment’ emerged, I continued reading other transcripts. While I read the transcripts, I not only searched for additional codes that were different from the ANGELO framework categories, but also kept these two potential themes in mind. Other text segments soon began to emerge that were related to my two potential subthemes:

- Participant 4: ‘Playground we need that. We need playground To build a ground for us to do more active there’s more physical training.’
- Participant 4: ‘Just no. They are just looking no action has been made. They are just planning to do. No action has been make. Sure they do they are going to ask they are going to give the ground and find some aid to help to forward the ground and the financial.’

These new text segments assisted in identifying that the participants shared common concerns regarding the broader physical village environment, and specifically, the facilities for physical activity and access to these. These segments were then highlighted, cut, and pasted under the ANGELO category, ‘Physical Activity – Physical Environment’, and listed under my potential subtheme, ‘Space for playing sports and doing physical activity’. Meanwhile, I continued reading and searching for new text

segments. More quotations began to emerge that helped define concerns with the space for playing sports and doing physical activity:

- Participant 6: ‘Playground we need that. We need playground in the village.’
- Participant 3: ‘At the moment we need the playground and some sports equipment. As during the off seasons of rugby, people in the village get slack so we need to continue our exercise and maintain our healthy body. That’s a big reason. We train in our school ground but recently the school management didn’t allow the boys to play as there has been some dispute. The ladies don’t have any playground to exercise during the day time as it is occupied by school children.’

These new text segments were added to the others listed under the six potential subthemes, and soon it was apparent there were multiple issues that were related to physical activity, facilities, and lack of access to equipment in the village. Every time a different transcript was read, an iterative coding process took place where new text segments were compared to previous ones. Once all transcripts had been read, all text segments under themes and subthemes were examined to ensure they were related to one another and that they helped illustrate a particular issue. These themes and sub-themes were then defined and named. In this example, concerns with space for playing sports were expanded to include issues regarding accessibility, poor equipment, and limited physical space. This subtheme was created as ‘Space for playing sports and doing exercise’.

With regard to accessibility and affordability of sports equipment, participants mostly mentioned that they were not able to access them

through the government programs, leading me to name the subtheme ‘Cost of sports equipment’. Finally, the preliminary codes were recoded, and the data began to identify and establish the relationships to other codes. I then investigated the coherent relationship and developed themes. This process produced two main themes and twelve subthemes as discussed in the findings chapter of this thesis.

3.6.12 Trustworthiness and Rigorousness of Qualitative Research

- The level of rigorousness and trustworthiness in this research can be described utilising the four principles for ascertaining rigorousness and trustworthiness. Lincoln and Guba (1985) described these principles as:
- Transferability – This is the degree to which results could be applied in a different environment and with a different community.
- Conformability – This refers to the absence of preconception and animosity in the research methods and research findings.
- Credibility – It is constructed on the exploration of people lived experience as observed and experienced by the participants.
- Dependability of data – This explains the reliability with which gathered information and data continue the same irrespective of how repeatedly and in whatever different ways the same data is gathered. As this mixed methods research is qualitative in nature, generalisability of the findings is not a projected outcome of this study.

Finally, rigour and trustworthiness mean that the researcher's methods are reliable across diverse researchers and different studies. Creswell (2013) (citing Gibbs 2007) identified several steps of reliability, which are demonstrated in this research as discussed below.

- *Step 1:* Proofreading transcripts to ensure that they did not have any obvious mistakes. For example, the entire fourteen transcripts were rechecked by listening to the audio recordings and proofreading simultaneously. I listened to all interviews before analysing the data, which made the content more familiar and aided with a comprehensive analysis. I was able to remove the mistakes and correct the sentence structure, as Fijian pronunciation of English is different, so these were missed in some transcripts; however, participant's words were not changed.
- *Step 2:* Ensuring that there was no change of meaning in the description of the codes during the coding process. For example, I was able to compare the data judiciously with the codes by writing memos about the codes and their meanings. I also kept an Oxford English Dictionary to find words that were difficult to understand or to clarify the meaning of the word and to find words appropriate to use in the process of coding.
- *Step 3:* Intercoder reliability check. Creswell (2013) described this as a simple process, which includes having one or more people code the transcript and match their work to conclude whether the codes and themes they have developed are similar or entirely dissimilar. I approached two final-year doctoral students within the

faculty who were qualitative experts to do intercoder reliability checks. I randomly selected two de-identified important transcripts from each code of chronicles. Every member was given an opportunity to read the transcript and write the codes on the transcript. The percentage of match fluctuated from 85% to 95%. On reflection, I acknowledge the importance of qualitative data reliability checks which was a very significant process and which assisted me to code my data correctly. These codes were discussed with my two PhD supervisors who guided me to accomplish this process. This is illustrated in Figure 3.14.

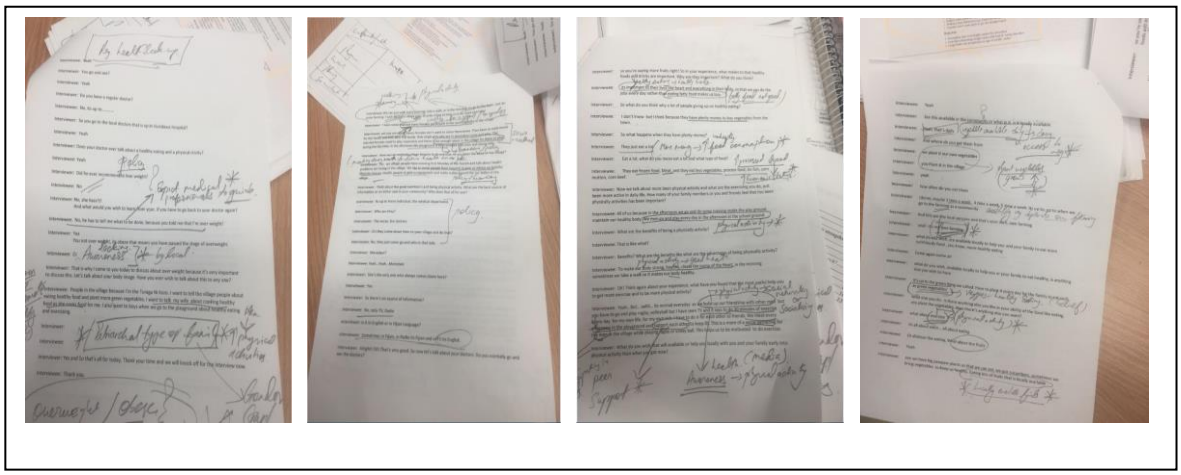

Figure 3-14. Intercoding done by two PhD qualitative researchers.

- *Step 4:* Triangulation is described as a crosscheck of information to develop accurate findings in data gathering (Creswell, 2013). In this regard, I was able to source other studies and used these as exemplars to guide the coherent development for the themes that were generated. Also, as mentioned earlier in this thesis, I used a

framework that had satisfactorily been used in other Pacific communities to guide this process.

- *Step 5:* Member checking to decide the accuracy of the qualitative results through final checking back to the participant. This process was completed in Phase 3 of the CBPR process. This process is called ‘the feedback process’ where the researcher was able to take the findings back to the participants and give them an opportunity to comment on the results.
- *Step 6:* Clarify bias that comes from the researcher while doing research. This process of self-reflection develops an openness and authenticates the chronicles to ensure they make sense to the readers (Creswell, 2013). As a researcher, I came with preconceive perceptions regarding iTaukei health and issues that exist in my community. I also practiced as a registered nurse in the same community so had already formed an impression about the perceptions of community health. However, according to Creswell (2013), there are no specific tailored measures to proceed with systematically removing bias. Throughout the research timeline, I was able to think of the social practices of the community. Therefore this research is based on honesty and trustworthiness. Further, I endeavoured to safeguard against researcher bias.

To overcome bias and vigorous reliability I recorded comprehensive field notes that included my reflection of my own subjectivity. Patton (1990) suggested considering self as an investigator is essential to deal with bias. For my research, I was constantly involved with researchers who are experts

in this research field. To eliminate bias I was able to accomplish the following:

1. *Participant feedback process.* This process was completed twice, firstly during Phase 2, dissemination of village health survey, and secondly during Phase 3, when I returned to the community for validating qualitative findings and receiving back verbal and written. Creswell and Clark (2011, p. 191) mentioned to 'determine the accuracy of contextual result through taking the final report or the themes back to the participants and determining whether these participants feel that they are accurate'.
2. *Supervisory team and peer debriefing.* I built a trustworthy relationship with my PhD supervisory team who were able to guide me to explore feasible categories, provide suggestions, offer other interpretations, give understanding, and suggest changes. They helped me to identify blind spots and errors, they assessed and advised on methodological processes to highlight any bias, they scrutinised my personal judgements and made the procedures of study more public.

During my research journey, I frequently had qualitative PhD colleagues review the field notes and provide constructive comments, which further developed my knowledge and allowed me to examine this study from a more informed perspective.

Field records: The researcher retained field notes about what had been observed and sensed during the fieldwork of this research. These notes were then used to highlight participants' reactions to reflections and interview

questions, which permitted the researcher to reflect further on the researcher's role within the community, the interviews, and the data, and identify how this could be reflected in individual or community responses. Furthermore, my field notes had a significant purpose during data analysis as described below:

- *Testimony.* My field notes provided a document of decisions, findings, and actions taken by me in the field.
- *Reflexivity.* My field notes promote reflexivity and constructive analysis regarding the research procedure including contact during the study, any issues or suggestions, and another synthesis of the research procedure.
- *Credibility.* My field notes are a significant aspect of this research, and this is not limited to culture, religion, or other perceptions and beliefs from a professional or personal level that could indirectly influence data gathering, interpretation, and analysis (Patton, 2011).

3.7 PHASE 3: DISSEMINATING PRELIMINARY FINDINGS

The research findings were disseminated in written and verbal form by the principal researcher by conducting community meeting so that participants understood what the findings meant, and what the research revealed about their lives. This phase is presented in the Community Consultation chapter. Consequently, the findings empowered the community to manage the health issues and decide on actions to be taken for social change to achieve better health outcomes. The village was able to provide feedback on the research outcome, which was an excellent indication of the

reliability and validity of the research. Dissemination of the study outcomes offered the researcher the final opportunity to display his respect to the community and show that he is aware of the community's needs (Lyons, et al., 2013). Collabration of the participants in decision-making, followed by dissemination of the findings and development of an intervention which empowered the iTaukei people, was the major objective of this research. Dissemination of the study outcomes has reduced negative behaviour in the community. Thus it reduced the possibility that the findings can be misused in any harmful way (Fassinger & Morrow, 2013). Community collobration dialogue ensured the findings were seen as trustworthy and empowering, and this is a powerful means of backing-up the logical conclusions and negating any negative stereotypical behaviour involved in creating social change within the community (Ponterotto, Mathew, & Raughley, 2013).

This collobration is an important part of the study, allowing the community and stakeholders to understand what was learned from the research in which they had taken part. Further, the constructive responses from the stakeholders and the community enabled the fulfilment of CBPR, namely, the identification of what did and did not work in the research. Such knowledge has led to the development of important future research and the establishment of strong relationships that will underpin future research (Love, et al., 2010). Through this research, the community was able to learn the importance of research and, hopefully, become more enthusiastic about research, and understand what advantages the research had provided them and the researcher with. Finally, the data will have community benefits, such as for the further development of projects, which was the intended cyclical

process in this study. In addition, the iTaukei village may use this research as a stepping stone to gain funding for the development of community issues in the future, and to help develop local-level evidence that will inform healthy community policies.

3.8 LIMITATIONS

Conducting CPBR is time-consuming as it involves working with the community to develop an agenda on a day-to-day basis. The obstacles faced in this work were notably similar to those encountered by Walters, et al. (2009), Wallerstein, et al. (2008), Minkler and Wallerstein (2010), Israel, et al. (2010), especially in applying Indigenous principles. In addition, building trust takes time. Gaining the trust of community members was one of the most prominent and time-consuming obstacles to overcome. A lack of trust can impede researchers from accessing underrepresented communities, from deepening community engagement, and from forming a true partnership with them (Minkler & Wallerstein, 2010). Trust-building in Indigenous communities revolves around creating relationships and developing an interactional reliability between the informants and the researcher (Walters, et al., 2009). This research proposal was initially well received by the participants, based on my personal prior experience in the district, mainly due to maternal links with the villagers.

First personal limitations were experienced while the researcher collected information about the feasibility of the research design and methods.

Secondly, my involvement as the researcher was seen, ultimately, as giving something in return (for example, research reports, providing culturally

tailored health literacy ideas, and linking the villagers into government agencies).

Thirdly, time was needed to get to know people, revive previous relationships with my maternal family connections, and build a coalition with everyone in the village. This was the main reason why the data collection could not begin until a year and a half into the research process. Engagement and association of the participants within the process were important, as it took considerable time for all parties to become involved with each other's customs and language, and feel comfortable asking and answering questions of each other. As astutely observed by former researchers, it involves listening rather than talking (Wallerstein & Duran, 2006).

Despite being time-worthy, building trust can lead to numerous challenges. As others have recognised, time is often less adequately supplied by the community partners (Baker, Metzler, & Galea, 2005; Dooris & Heritage, 2011; Douglas, 2009; Erickson, 2010; Israel, et al., 2011; Minkler, 2000; Stacciarini, Shattell, Coady, & Wiens, 2011; Wallerstein & Bernstein, 1994). Likewise, during the three years from the time of proposing the research until the intervention and the dissemination of the final findings, many moments occurred where the respondents' inhibitions and frustrations overpowered their capability of understanding the issue. Examples of this included the removal of the community playground from these villagers, which hindered their ability to partake in sport and exercise: due to clan disputes in the village, the land was taken away within six months of creating the playground.

Lastly, time management was a major factor preventing timely completion of the research. Repercussions from delaying data analysis resulted in the transfer of the district nurse who was to have played a major role in this research. Importantly, I relocated to Brisbane, away from the villagers I was working so closely with. This impeded the research progress, given the fact that I was no longer available for face-to-face communication.

Recognising limitations, I found CBPR involves dynamic reciprocity. It is not a static process. It is time and context dependent-contingent on certain circumstances and particularly community needs. The extent and impact of CBPR process changes over time, as do perceptions of researcher role and community needs. Meaningful benefits may be intangible, fleeting, or they may not emerge for a long time. I have come to realise, sometimes establishing a meaningful longterm relationship is, in itself, a form of CBPR.

At the same time, and as discussed in the feedback section of the Community Consultation chapter 4, several incidents forced me to alter my own expectations about the available time. I learned to recognise that my time was structured around the very real dictates of academic deadlines, which were not shared by the community partners with their own deadlines and work pressures. This recognition supports the works by Mohammed, et al. (2012) and Israel et al. (2001), who identified similar contrasts between academic and community expectations. Harmonising academic needs and community interests. Horowitz, et al. (2009) described the process of disseminating CBPR findings to the local communities in the research, to the key informants, and to the wider communities, who are entitled to know the lessons learnt from the research. Feedback sessions provided by the local

communities are vital, as this strengthens the relationship between academics and the research subjects. The feedback process outlined in the CBPR chapter demonstrated, with pertinent examples, the incorporation of principles of CBPR into the research design and during the process of gaining an understanding of the socio-cultural factors of obesity. The results from disseminating the community feedback also demonstrated the methodological rigor of the research through its evaluation of leading factors such as credibility, transferability, dependability, and conformability.

Though some important questions remain unanswered, in retrospect, I was fully committed to ensuring that my values should not drive the feedback and dissemination of results, rather, it should solely be based on community values. For example, demonstrating methodological rigour speaks of academic needs to 'justify' the research, but as Brennan, Baker, and Metzler (2008) argued, perhaps it is time to move beyond the question of validity and start addressing questions like 'is the work helpful?' or 'was it capable of making a difference?' To a certain extent, there is evidence of this in the production and distribution of findings of results and copies of leaflets that speak about the strengths of the entire process. Perhaps, a formalised feedback process would have strengthened this CBPR process and created space to speak out about communal concerns and not rely only on the personal opinions of the researcher. By the time I had recognised this, it was too late as some of the research team members had transferred to different districts and positions, and were understandably prioritising new jobs.

According to Brown, et al. (2010), real-world research determining what defines success in community-based health promotion is still in its infancy.

Although I presented some anecdotal evidence attesting to its positive reception in the community, I believe this research would have been reinforced with the addition of ancillary feedback from the community. Tracking the culturally tailored health promotion interventions has proved to be difficult in maintaining a balance between research protocol and community needs. The 'elementary findings' leaflet was distributed to each household three days before the community meeting. This was due to time constraints, mismanagement by the research team, difficulties with accessibility to the challenging geographical locations of the community, and the non-availability of the community members. At the community meeting, copies of the 'elementary findings' leaflets were informally distributed without a systematic method in place to allow familial discussions before the researcher led feedback. Discussions regarding the implementation of a data dissemination strategy in the lead-up to the feedback did not move beyond the informal conversation stage, possibly because it reflected researcher's interests rather than the community partners' interests. This weakness has been identified in previous CBPR studies where it has been reported that partners prioritise to get programmes in place as rapidly as possible, undermining academic interest, which is focused on the effectiveness of the research issues (Bracht & Tsouros, 1990; Butterfoss, 2006; Cargo & Mercer, 2008; Minkler, 2000; Viswanathan, et al., 2004; Wallerstein, et al., 2008)

3.9 ETHICS

I formally obtained ethical approval from Queensland University of Technology Human Research Ethics Committee (UHREC), (Reference No. 1400000565). Responses to the questionnaires were kept confidential, and

the completed questionnaires were securely stored away according to the University Ethics requirements. A copy of the ethics approval document is provided in Appendix F. In addition, the ethics approval process, this allowed me to critically analyse pertaining to university's perspective and as an Indigenous researcher where cultural ethics need to be taken from village elders.

In addition to my research conducted in the iTaukei community, I was also required to submit a research application to the Ministry of iTaukei in Fiji. This application was made by the Ministry of iTaukei for all study undertaken in Fiji (see Appendix F). In order to be accepted in the village and undertake culturally ethical research, I was required to link and honour the relationships that were part of the iTaukei community norms and practices, which is a way of maintaining coherence and acknowledging and honouring the relationships within the iTaukei village structure (Nabobo-Baba, 2006).

It is significant to demonstrate the knowledge of the ontological world, and the association and our social link to the *vanua*[10] was illustrated by the iTaukei village protocols, which were part of this study. The cultural protocols, including conducting *sevusevu* to the village and the participants of the research, were discussed with research team. We decided that *yaqona* would be required for the *sevusevu* ceremony. The cultural ethical procedure of the *sevusevu* not only honours the land but, if approved by the village elders, it implies a blanket consent for us to be in the village and for all

[10] *Vanua*, in the context of the way of knowing, refers to 'a people , their chief, their defined territory, their waterways or fishing boundaries, their environments, spirituality, their history, their epistemology and culture' (Nabobo-Baba, 2006, pp. 155-157).

villagers to participate in and support our work, whether it was a study or otherwise. With this agreement, individual consent was redundant.

From the university's perspective, it was essential for me to get individual consent from each of the study participants; however, from the iTaukei perspective this was considered to be disrespectful to the collective permission already approved by the community elders. To meet the requirements of the university and the village, I discussed with participants that in the academic world, individual consent was required. I reassured the participants the written consent was not disrespecting what was conducted at the community level. As an alternative, I explained to participants that they could consider the option and to be aware that they were in no way obliged to sign the consent form. For me explaining this, I felt very uncomfortable as it made me feel that I was only conducting this for university ethics protocol, understanding that what we were going to talk was known to be confidential and that in iTaukei culture this did not have to be stated outright.

In the context of the university and the village, selecting factors of what was required to be demonstrated in this doctoral thesis was determined by what the community thought was trustworthy and believable information, which needed to be part of the story that has been portrayed in my research. My role, then, was to ascertain that participants' perceptions reflected what they consider credible. Telling the story, what was important from the university to consider this ethical process included my supervisory team, literature review, scholars, I discussed with, and other stakeholders I consulted with to be able to determine which factors needed to be included in the ethics process and written about in my doctoral thesis. A significant

process was undertaken from my position as both the insider and the outsider, which allowed for the factors to be carefully discussed together to demonstrate honesty that brought together the ethics protocol expressed in this chapter.

3.10 CONCLUSION

As is evident throughout this chapter, CBPR is a substantial methodology. It involves collaboration with the participants, which leads to the empowerment of the community, to equality (so that the communities would be treated fairly), and to building trust. The community members become partners in creating new knowledge and combining knowledge with actions, in this instance to achieve good health outcomes. The purpose of the current research was to work side-by-side with the community, rather than the researcher acting upon a community to seek answers to a research question. By working together, the village members can explain the questions and methods, disseminate the results, and apply the intervention themselves. The villagers thus become part of the research team, while the researcher becomes involved in the activities of the community. The result is that the community feels more in power or sees itself as sharing the power. This methodology is fluid and iterative. The interventions result from a range of research designs and methodologies, and concentrate specifically on issues of trust, empowerment, and cultural diversity within the community.

Chapter 4: Community Consultation

4.1 INTRODUCTION

The benefits and efficiency of community-based participatory research (CBPR) depends on continuous collaboration between researchers and community participants. This cyclical progression can prove quite challenging, and is separated into phases. First, there is the preliminary needs assessment, then the process of finding a research outline, followed by collection, then analysis of data. Finally, there is the result dissemination phase. The key components of CBPR are engaging the community, building their capacity, and ensuring sustainability of the initiative. In this doctoral research, the goal is to engage effectively with marginalised rural iTaukei communities, who have limited previous experience of research. In this chapter, the researcher will explore the approach undertaken, discuss the experiences in implementing the process, and outline the main tasks for each of the key phases of CBPR.

Building rapport and trust with the research community, including the iTaukei, is time-consuming; however, it is crucial to engaging marginalised community members (Minkler & Wallerstein, 2010). Many authors state that community-based research can be time-consuming because it is dependent on the availability and participation of community members. Regardless of how long this may take, the values and principles of CBPR are relevant to numerous research activities, particularly those that focus on marginalised, Indigenous and isolated rural communities. According to Israel, et al. (2011), researchers who adopt the elementary principles of CBPR, as found in

scholarly studies, encounter challenges during implementation in the field. Planning a collective and workable program, building mutual goals and ideas, and focusing on problems that are real to the community are all challenging tasks when researchers are also battling with university deadlines and requirements. However, the results are worth the effort, particularly in marginalised and low socioeconomic communities, where there are many challenging health problems, social issues, and socio-cultural concerns, plus an urgent need for economic and political empowerment (King, et al., 2011; Livingood et al., 2011; Maxwell, 2012; McCabe, et al., 2013; Minkler & Wallerstein, 2010).

4.2 ESTABLISHING THE GROUNDWORK

How is a suitable research question formulated, and who formulates it? In most circumstances, it is the researchers who initiate the research subject to be studied (Creswell, 2013; Elo et al., 2014; Israel, et al., 2010; Minkler & Wallerstein, 2010). Many consider that academics excel in the area of research and that they are regarded as research experts. Further, the availability of funding and the researcher's interests usually guide the research question. According to Erickson (2010), there are very few studies where both the community and the researchers partner to formulate and decide on the initial research question. Nevertheless, the difference in priority between researcher and community is an anticipated outcome of disparate resources and interests (Douglas, 2009; Glanz, Rimer, & Lewis, 1990; Israel, et al., 2010; Israel, et al., 2013). For example, there may be a conflict about how statistical data, the importance of the research, and different resources, are used to create dialogue and collaboration with the community. As Green,

et al. (1995) stated, there may be many instances where academic researchers and community members do not agree on the significance of a research subject. This then raises the ethical issue of whether this makes the research emphasis insignificant. However, formulating the research question is only the starting point for discourse with the community with the research question regarded as an important deliverable from the researcher to the community. Hence, it is important that the research agenda and pathway of the research be openly discussed between both groups.

4.3 COMMUNITY PARTNERSHIP BUILDING

During the establishment of community partnerships, challenges about the attitudes of insiders and outsiders might exist. Problems associated with culture and socioeconomic factors may also exist, and must be correctly addressed. Further, power differences exist in all communities, but can become particularly significant in CBPR application, as ‘outsiders’ dialogue with ‘insiders’ (Tse, et al., 2011). Unexpressed resistance to, and conflict with, ‘outsiders’ can become misunderstandings or internalised domination (Israel, et al., 2010).

The disparity of physical resources available and the different skill sets between researcher and community are further points of consideration. Disagreements often occur when varying levels of skills are set against each other and, more often than not, it is the community’s skill level that is undermined (Horowitz, et al., 2009; Hotze, 2011). This disagreement, frequently left unspoken and unrecognised by the researcher due to its embedded nature, can lead to unsatisfactory outcomes. Effective and well-functioning community partnership building will likely put both parties on an

equal footing, and help assure everyone that varying perceptions are considered. They are also an important resource for ‘cultural guides’ of the community (Minkler & Wallerstein, 2010).

The agenda and purpose of the community partnership building need to be transparent, trustworthy, negotiated, and understood. Regardless of this, it is unavoidable that some community members have their own focus, and likewise, some researchers may have their own subject matters of interest.

4.4 COMMUNITY PARTNERSHIP THROUGH COLLECTION, ANALYSIS AND DISSEMINATION OF DATA

The objective of CBPR is to have high levels of community engagement throughout a research project (Horowitz, et al., 2009; Hotze, 2011). Most community-based studies are very successful at gathering a group of community stakeholders in a community research capacity. However, according to the literature, few have attempted to allow or include community members in the data collection or the data analysis process (Wallerstein, et al., 2008). Wallerstein and Bernstein (1994) further suggest that while there has been some effort to engage community members in the data collection stage, there has been less effort in involving the community in the data analysis stage. Scholar-based research suggests that some hurdles can inadvertently develop into key challenges for the CBPR researcher as they utilise community members in the research process (Wallerstein, et al., 2008): for example, the checks and balances method utilised by business institutional review committees of universities to safeguard human ethics. In marginalised communities where there may be low literacy rates, it would be challenging for community members who want to be actively involved in data

collection to pass the human ethics test required of those who collect data from participants (Bergold & Thomas, 2012).

Involving the community in the data analysis stage of the research can decrease the barriers between researchers and community members, and can enhance the community's ownership of the research. However, for most community members, the significant task of analysing research data is an unwanted responsibility, and for many the scientific role is too multifaceted and complex (Bunnell et al., 2012). Moreover, people who are new to research find this process time-consuming and inconsequential, and often face difficulties in understanding the scientific language. Minkler and Wallerstein (2010) suggest that while certain aspects of analysing data may inevitably become the obligation of the researcher, no analysis of data should be done without some engagement by the community members.

4.5 DISSEMINATING RESEARCH FINDINGS

Disseminating research findings is an interesting stage. However, it remains the most uncultivated stage and the most challenging for academics and community members alike (Tindana, et al., 2007; Waltz et al., 2014). According to Park (2006) and Swinburn, et al. (2007), research findings must be disseminated with thoughtful consideration and one should account for the potential social, cultural, political, economic, and ethical implications within the community (Park, 2006; Swinburn, et al., 2007). The utilisation of a 'memorandum of understanding', which can either be formally or informally issued, can be beneficial to convey the appropriate way to disseminate the research findings (Minkler & Wallerstein, 2010; Mooney-Somers & Maher, 2009). The fundamental principle of CBPR is to bring constructive social

change through viable community initiatives, and therefore the dissemination of results is an integral part of the research and must be well thought through and articulated.

4.6 SUSTAINABILITY AND COMMUNITY CAPACITY BUILDING

Capacity building and sustainability can be achieved through negotiation and dialogue, with transparency and discussion being vital central goals from the beginning of the research project. These are significant components of the project and can potentially determine the features of the intervention. Subsequently, while they are usually the most challenging characteristics of the research, they are key components and need exceptional consideration. Capacity building is important to develop community empowerment and has the twofold purpose of challenging the organisations and the people who have control ‘over them’, as well as extending the authority of the community towards action for social change (Wallerstein & Duran, 2006).

Capacity building within the CBPR is described by many researchers as building infrastructure and improving services related to health, devising innovative approaches to solving community problems, and developing sustainable health programmes in the communities (Hacker et al., 2012). Capacity building develops the concept of community empowerment which can facilitate sustainable health programmes in the communities: programmes where researchers can provide expert ideas, materials, and resources, and support the activation of strong networks with other agencies (Kemmis, 2006). In this regard, it is important for the researcher to be committed to the CBPR philosophy. Although the initial study may have been

accomplished, the budget may be completed, and the academic write-up disseminated, the researcher should hold themselves responsible for developing a model of sustainable change, or influencing change, in the community in which they undertook the CBPR. Influencing policy change is one form of developing a long-term and optimistic impact. For example, in the Pacific region where a Pacific Obesity Prevention in Communities project (OPIC) intervention took place to improve the food environment of the Pacific, the researchers specified a model approach for participatory national agenda for policy intervention (Swinburn, Millar, et al., 2011).

Furthermore, community–researcher coalitions have multiple advantages in that they can enable sustainable improvements in health, such as during a recent project to provide knowledge and education to the communities on Ebola prevention, using bottom-up approaches and applying community capacity–building principles: in this particular project, this led to reduced Ebola transmissions. In addition, CPBR added value through self-management of Ebola quarantines, control of border mobilisation, safe and dignified funerals, and in setting up community care centres (Laverack & Manoncourt, 2016).

This current doctoral research draws upon the researcher's community consultation background in the rural area of the Serea village of Naitasiri province in the Fiji islands, comprising iTaukei (Indigenous Fijians). This project included 14 interviews conducted with 10 women and four men in the community and 106 participants who took part in the village health assessment survey. Participants were aged 18 years and over and from the targeted community. This research also drew upon the researcher's

experiences attained from informal dialogues with stakeholders, multiple visits to the district during holidays, and surveys that targeted the overall focus of empowering and engaging communities, completed by men and women from the villages, all the while focusing on developing a sustainable community-based obesity prevention initiative.

The objective of this research was to explore the socio-cultural constructions of health, relevant to obesity, from the perspectives of iTaukei adults of rural community, to enhance the capacity building for obesity prevention, and develop community-based interventions that would increase knowledge about healthy eating and exercise. This chapter focuses on the methods involved in undertaking this research, and its significance for community engagement. This research began in February 2013. The community consultation research process described below contains the steps taken to achieve the research goal.

4.7 COMMUNITY CONSULTATION PROCESS

The decision to apply a CBPR approach was collegial and initially was spontaneous and entirely based on the practical knowledge of the target iTaukei community. I was able to utilise my local knowledge as I had lived most of my early years in the same province. This enabled me to bring to the research approach a personal understanding of not only the iTaukei culture, language, and history, but also the significant perception of socio-cultural and socioeconomic factors of local marginalised iTaukei communities.

The research team were able to acknowledge that the iTaukei community in the rural areas did not have enormous experience with scientific data and academic researchers and that, if they did have any

involvement with university researchers from abroad, it would have been more likely during the data collection phase. That is, if any academics had approached the community, they did so with the purpose of collecting data and did not usually contact the community again. My main objective was not to leave the same legacy but to be a community activist and bring social change so that communities were able to have long-term benefits from the research project.

4.7.1 Negotiating the Research Question

On my first site visit to Fiji, I met with a range of stakeholders, mainly to introduce myself and to discuss the anecdotal, statistical data and my research ideas. I repeatedly obtained feedback from the stakeholders that an intervention that focused only on obesity related to NCDs would be ineffective in communities with multiple health disparities. As a researcher, I was unprepared for the negative reaction that discussions about obesity prevention would provoke within communities that had other more serious health problems. Since then I have determined that the literature has highlighted evidence that communities and individuals react very emotionally to the matter of obesity for various reasons (Braun et al., 2014; Crawford, 2010; Mavoa, et al., 2012; Swinburn, Millar, et al., 2011). As a result of this feedback, I acknowledged that the wording of my research project 'obesity-related NCDs prevention/intervention' was sensitive, and it suggested that I had limited understanding of the community's health concerns and needs. In this rural iTaukei community, they clearly believed that clean water to every household, a community dispensary, diabetes education, and physical education for older men and women were among the more serious concerns.

Like other doctoral students, my research agenda was driven primarily by university dates and time frames, and funding that was available and sustainable. I started my research with conversation with villagers after the *sevusevu* protocol in the village, which gave me cultural ethics approval from the village elders as discussed in Chapter 3. I started to link myself with the *Vanua*. The word conversation in iTaukei is called *Talanoa*[11]. *Talanoa* allowed me to have oral interaction with villagers to develop a more authentic knowledge, which led the research team and the villagers to develop research questions. *Talanoa* literally made us talk about nothing in particular and interact without any rigid framework. In iTaukei villages this is a traditional way of communication, either informal or formal. Meo-Sewabu (2015) mentioned *Talanoa*: in Fiji it is recommended for collecting information from iTaukei villages. The importance of *Talanoa* would be disregarded by the Western investigator who was not connected to the iTaukei community or by individuals who have strong perceptions of Western ideology. *Talanoa* allowed us to address and focus only on obesity prevention.

Talanoa may take place in informal and formal settings. *Talanoa* in the formal setting, within the context of this study, took place after following the cultural protocols linked with permission to enter into the *Vanua.* For this doctoral study the research team, whose to conduct informal dialogue within the community. This allowed all social status with the iTaukei community, including age differences, to be ignored and participants were made at ease:

[11] *Talanoa* can be referred to as a conversation, a talk, an exchange of ideas, or thinking, whether formal or informal. It is almost always carried out face-to-face. *Tala* means to inform, tell, relate, and command, as well as to ask or apply. *Noa* means of any kind, ordinary, nothing in particular, purely imaginary, or void (Vaioleti, 2006).

there was more chance of equality and participants were able to freely discuss their perceptions.

Talanoa were conversed with laughter, jokes, stories, and descriptions that permitted other participants to agree or disagree or tell their own perceptions in relation to what was discussed. Even though these discussions were often filled with laughter, there were many times when people's perceptions were strongly relayed to us in confidence and addressed by the villagers. During the *Talanoa* my role was as a facilitator, who was to guide the dialogue according to the open-ended question I had prepared. Rather than relating the question, I picked up information that may lead us to bargain the research question.

During the *Talanoa* session, we developed trust and participants were at ease to share their perceptions openly. No time limit was put on the *Talanoa* session. The participants proposed to focus on obesity prevention intervention initiatives. They perceived that this was more relevant to their lives – lives that the researcher acknowledged are hindered by low income and the many hardships of a geographically remote location. In this initial and important stage, the research team and I acquired knowledge of the significance of phrasing, processes, and choosing appropriate words to facilitate the research question during the initial process of CBPR. At the end of the *Talanoa*, it generally felt as though we were all just linking our stories back and forth, but in realty the purpose of the research had been accomplished.

4.7.2 Initiating Multiple and Various Informal Stakeholder Engagement

The CBPR approach guided me to meet with diverse levels of local stakeholders in the beginning phase of the engagement, and this led to establishing a transparent and trusting rapport with the iTaukei community. This also allowed the iTaukei to provide feedback on the aims and plan of the research. During my visit to the community, I conducted ethnographic surveillance at community shops, the local health clinic, and the community food meetings, while socialising with iTaukei men and women during food preparation and within local farming areas.

The primary goal was to introduce myself to the community, discuss our research initiatives, and allow communities and stakeholders an opportunity to question my purpose and objectives. By integrating myself into the community in this way, I was able to acquire community perception, address the emotions aroused by any unintended repercussions or misunderstandings, and garner their expectations. For example, frequently academics state that they get great answers from communities and that their feedback is positive, and this is understandable while ever the community can seize any opportunity to help eliminate health disparities. Similar language was used by the iTaukei communities, stating ‘please help’ and this stance came without hesitation. This perception would have been driven by many factors, such as the extreme need for any intervention, or perhaps their belief about my influence as a university researcher from Australia, and their knowledge of my previous employment in the province.

During initial *Talanoa*s when my objectives, idealistically, were to focus on sharing my research initiatives, most of the community participants, local

health providers, and other stakeholders were inclined to learn more about the clinical features of obesity and what was needed to prevent obesity, and to listen to stories of individuals with numerous kinds of disease that pertained to obesity, such as leg amputations and blindness caused by diabetes. As a researcher, I assured them that there would be no anxiety-provoking intrusions or repercussion that would limit my research project. Therefore, I distributed pamphlets (produced by the Queensland Health Promotion Unit) to the community, and stated that this research was not funded, rather it was an individual researcher-driven initiative, in an attempt to diminish the community's expectations related to funding for the final intervention. During the initial phase of engaging with the iTaukei community, I realised that this stage of 'getting our feet wet' or 'jumping in feet first' was a significant challenge, more so than anything related to the implementation of the 'actual' research.

However, I came back from the first community and stakeholders visit with the strong opinion that it was important to commence the research slowly so that I was able to get support from my supervisory team's experience.

Accountability, responsibility, education, transparency, and building trust started as soon as I made this decision and was given access to the community. In fact, on my informal visits, I heard talk of villagers with whom I had previously spoken informally, who were now more self-conscious about their body image and weight. I heard women talking about not being able to exercise because there was no playground in the iTaukei village. Furthermore, young men and woman approached me with indirect questions

about obesity, and some stated that they feared that if they went to a local health professional, they would be diagnosed with diseases and prescribed many pills and sent home. In effect, this group of people just wanted more information and I was seen as a great source.

Following CBPR principles, I continually kept the question in mind on how to successfully sustain the obesity prevention project without external support and how to replicate the project in other rural villages. The improbability of external support became more apparent after I met with officials from the Ministry of iTaukei, Ministry of Health, Ministry of Youth and Sports, and Ministry of Social Services, as well as officials of the local health clinic. I discussed the possibility of working with local health centre officials who live in the district and have good knowledge of the local district. I was constantly having dialogues with others for bipartisan support to empower the rural communities to sustain the research project and bring social change for healthy living in the rural iTaukei villages.

4.7.3 Establishing the Health Research Team

Based on the CBPR approach, we established a community-based 'health research team' Figure 4.1(pictured below) made up of a village health worker, local community dietician, subdivisional community charge nurse (who lives in the village), district nurses, a university researcher (myself), and iTaukei government officialsand the *Turaga Ni Koro* (spokesman of the village), and provided the village with a community *Talanoa* for participating in our research process.

Figure 4-1. The Health Research Team (Photo supplied by village health worker.)

The research health team was crucial for numerous reasons as discussed in section 1.8. The health research team was established based on the group knowing the relationships in the community as they currently lived in the village and had grown up in the culture, had knowledge of village relationships and knew the norms within the community context. The team had pedigree knowledge of the village, where social and physical parameters were, and how they were related with my families, which I needed to acknowledge (including those who were dead, absent, and present in the village). Most importantly, the research team guided me as to how I should present myself to the villagers to show respect at all times. These cultural protocols were put in place in the village to maintain social order,

understanding of the local socio-cultural relations, and understanding of the way these relationships are carried out with respect.

This process allowed me to introduce myself to a small number of research team members who would have a very important role because they were already undertaking remarkable community work in the district, with some members living locally in the targeted community and being gatekeepers. During the initial research team meeting, several members stated that this was the first time they had encountered a multidisciplinary team in one room, and that this was a great way to develop their network and work as a team to eliminate local health issues in the communities.

At this meeting, I told the team about my meetings with various stakeholders and the information that I had already collected. I explained that the objectives of the team were to direct, advise, and hopefully, support the research goals. Moreover, it was also a favourable time for me to work collaboratively, and I pointed out my desire to share significant data collected. Since most members of the research team were busy with daily work, we decided to communicate mostly with text messages. The subdivisional community charge nurse was appointed to coordinate the local communication, and I made at least weekly phone calls and exchanged text messages with the subdivisional community charge nurse giving regular updates. This research project was given ethical approval from the QUT Ethics Committee, which took several months and multiple meetings with the PhD supervisory team at the hosting university.

All members of the research group were supportive, ensuring the research was conducted in a culturally ethical process, and contributed

directly to the data collection and data analysis process of the research. Nonetheless, at the second research team meeting, I was told by the research team that respect of the elders of the village decision process, which is associated with honouring relationships, is part of iTaukei norms and cultural practices, which is a way of maintaining coherence and understanding and honouring relations within the community structure. I was able to provide refresher training on data collection, even though the whole team had some experience in data collecting instruments. Interestingly, and of help to the project, there were no new members to the research team, even though there was a significant time lag between the face-to-face meetings.

4.7.4 Data Collection

In this research, capacity building predominantly occurred during the data collection and data analysis phases. As the community-based research approach was established in this research, it was important to have local members of the iTaukei community engage in the data collection phase. I was able to include in the team trained local village health workers who work voluntarily for the community, and these health workers conducted the height and weight measurement of the participants during village health survey. They also conducted home visits to participants to discuss the research project and to clarify any questions about the informed consent process.

During the interviews, I was able to pair with a community health worker who had experienced the interview process. The ownership that the community health workers felt towards this research was impressive, and, in effect, these community members became informal educators about obesity

prevention. For example, community members would ask village health workers about their work with the research team and they would discuss, without prompting, desired information about the research project. Moreover, community members became familiar with the initiatives of the research and were able to incorporate impromptu service delivery that was orientated to the research.

Surprisingly, most of the research team members repeatedly stated how overwhelmed they were by the problems, and how the participants sharing perspectives of their lived experiences had helped them to understand the problems. Interestingly, all of the members stated that the data collection experience educated them and that prior to this they had many misguided assumptions about their community members. However, they discovered that they held more opinions in common with iTaukei community participants than they had previously thought. This same judgement was also articulated during the data dissemination stage.

4.7.5 Data Analysis and Community Perceptions

Analysis of data was conducted with the help of a local expert statistician; therefore, data analysis was conducted within the parameters of the study goal, and this included measuring the overall health of the iTaukei villagers. For the purpose of developing obesity prevention intervention programmes and purposefully selecting participants for the structured interview, the selection criterion was a BMI greater than 30.

As the lead researcher, I attended extensive additional training to learn the processes of the contextual data analysis. The PhD supervisory team provided guidance via face-to-face meetings to supervise the data analysis

and the development of the main themes related to the problems that were of concern to participants. As the researcher, I developed extensive, factual summaries of the interviews of each of the 14 participants. Each summary contained the quantitative data of the response for each of the STEPS survey categories and a contextual abstract of the participants' responses. Descriptive analysis was conducted to categorise the common themes across all interviews, and the ANGELO framework guided this. Initially there was a steep learning curve for me, as I had never conducted data analysis that required independent theorising and this was made more difficult as it was about the iTaukei community, a community to which I also belonged. To enable this process, I accessed every training session available, took advantage of offered support and guidance, and networked where possible, to ensure I provided quality work. The process of conducting analysis from such different viewpoints further highlights the significance of community engagement and the need for safe keeping of data and for ensuring the interpretation is linked to the context and the culture.

4.7.6 Results Dissemination Phases

Dissemination of the results had two subphases. The initial phase was the dissemination of the village health assessment STEPS survey to develop the obesity prevention intervention project. During this phase, a community *Talanoa* was conducted. This community *Talanoa* was further divided into two sessions with appropriate breaks. The first portion of the *Talanoa* was aimed at sharing the findings of the survey, exploring the perceptions about obesity and its causes in adults, and identifying techniques to prevent obesity among individuals in the iTaukei community.

This *Talanoa* was conducted in the village community hall at 8 pm on 18 December 2014 and involved the stakeholders from the local health office, district Roko Tui (executive head of the district), and the village participants. The *Talanoa* was announced by the spokesperson of the village at 8 am and 6 pm. Eighty-three participants attended the village *Talanoa*. I presented the initial survey results to the village participants in simple English using graphs and percentages via a PowerPoint presentation on a projector screen (see Appendix E). These results were based on the health assessment survey, were focused on obesity, and contained significant findings for the village.

Participants were requested to write their views about the growing concern of obesity and related issues. Their views were then written on newsprint paper and discussed among the villagers in smaller groups. The growing level of obesity in the community had not previously been discussed; therefore, participants were guided in the subject, facilitated by the research team. Participants were then requested to write down on sticky notes their opinions about how growing obesity in the village could be resolved to maintain a healthy lifestyle and prevent NCDs. Participants' opinions were again discussed and shared and written down on the newsprint Figure 4.2.

Figure 4-2. Talanoa Session (Photo supplied by village participant).

The aim of the second dissemination step was to facilitate a *Talanoa* to help the community to prioritise obesity prevention and maintain a healthy lifestyle and to develop specific, measurable, achievable, realistic, and timely (SMART) intervention programs. Initially, community intervention views were reiterated and the benefits discussed between the community stakeholders. The community ultimately identified and prioritised four interventions:

- healthy eating education by a local dietician
- a walking group for men and women
- playground for women and men
- developing a village fitness gym.

The interventions prioritised by the community were written on large newsprint sheets Figure 4.3 and divided into four sections, with the interventions identified in one section. This was then displayed on the wall. Participants were then asked to take into consideration all of the interventions that were displayed on the wall and individually prioritise the most important components of the obesity prevention interventional proposal agenda in three steps.

Figure 4-3. The interventions prioritised by the community (Photo supplied by village participant).

In phase 1, interventions that were regarded as potentially significant (effective and achievable) were rewritten individually on newsprint and displayed on the wall. Participants were then given self-adhesive labels, which were colour-coded: red represented extremely important, blue represented somewhat important, and green represented least important. The participants were advised to prioritise all the interventions that they

considered realistic and that could be implemented in their village and apply the self-adhesive labels. Finally, the participants were asked to decide on one of the interventions that they believed was acceptable for the final research interventional program.

The red sticker was most frequently labelled, and it supported the idea of having a playground for women and men in the village. To progress the playground, some land was donated by the (*Mataqali*) village clan leader who shared the story of his wife, who was obese and had developed diabetes which later led to a below-knee amputation. The clan leader stated that village tradition adhered to *Vakaturaga* (ideal behaviour) by iTaukei women and this hinders married women from participating in exercise.

Participants were asked to agree on one intervention that the villagers would support in the intervention program. Prioritising and applying the red label sticker was a smooth process and the community was able to make consensual decisions as the *Talanoa* progressed. Finally, the village youth club voluntarily took the initiative to implement the intervention, as this was within their capabilities and all resources were locally available.

In phase 2, I returned to the community and met with community members and stakeholders to disseminate findings from the interviews and receive feedback on the community intervention. This phase was conducted after nine months of community intervention (the volleyball court pictured in Chapter 3). My goal was to validate the process and report back to those who were interviewed during the initial phase of the research. I also passed on the survey data, assuming that the iTaukei communities would like to use it to lobby for benefits, including those unrelated to obesity prevention or

health. The results dissemination phase was a two-pronged approach: one was a written summary pamphlet provided to the communities (see Appendix G), and the other was a PowerPoint presentation that highlighted the key findings of the community interviews.

I met with the representatives of the Ministry of Health and the Ministry of iTaukei. I also conducted results dissemination sessions with my local research team and other community stakeholders. Once again, I invited community members to share the findings with some of the influencing stakeholders. In the *Talanoa* with the local village health worker, the research team delivered verbal and written reports that underpinned the important themes that had emerged from the community *Talanoa* and interviews. The main objective was to make these *Talanoa* collaborative and engaging to support building a network for rural communities.

The findings from the interviews and community *Talanoa* were seen as constructive and beneficial. Most of the representatives were satisfied that the research had delivered sound research findings. Three days before the community *Talanoa*, pamphlet handouts were distributed, which underscored the main points from the interview and previous community *Talanoa*. This allowed the community to discuss and validate the findings and provide written feedback, such as ticking the most important points if they agreed. Space was also provided to write their comments or suggestions underneath the main points. The response in the different sessions with community members and community stakeholders ranged from passive (not a lot of verbal feedback) to vigorous. There were fewer participants compared to the initial community *Talanoa* held nine months prior. During the *Talanoa*, the

most vocal response was from the church minister who had great influence in the community. ITaukei communities are devout Christians and trust the church ministers. In retrospect, while this research project did invite all the faith organisations to participate and engage in the iTaukei community, there was a lack of engagement on their part. During the final dissemination, the church minister's feedback was vigorous and encouraged the targeted community to incorporate health matters on Sunday church day, such as organising Sunday family day after the church services. This was one of the significant social changes that were achieved during the final dissemination *Talanoa*.

Certainly, the results feedback discussions were vital, but while I anticipated the conversations to be purely about the results, the community's engaged and began discussing the results, adding their suggestions for the pamphlet, and validating the research findings by ticking the boxes. Interestingly, during these sessions, I also observed that the playground, which had been developed by the youth groups of the village, had vegetables planted on the land. I informally enquired of the village health worker and was advised that the landowner took the land back three months after the commencement of the obesity prevention intervention project.

The results dissemination *Talanoa* with the iTaukei community only (not including the stakeholders) made me critically review the research agenda because I felt that I had been spending significant time conducting formative research primarily for the researcher's benefit. While the research was designed to have a more detailed understanding of the concerns in the community before developing health promotion interventions, the

community's perception was that this was almost pointless, evidenced by their nonverbal attitudes when mentioning the vanished playground. Also, there was nothing unanticipated about the increasing levels of NCDs, the gender inequality, the premature deaths, risk behaviours, and the low socioeconomic burden in the community.

In future research with a results dissemination phase, I will ensure more comprehensive and purposeful feedback methods. In essence, a more organised approach focusing on getting feedback from communities would be more meaningful, and the significance of the disseminated results would also be better understood. As a novice researcher, I felt I needed to have a more precise understanding of the outcomes of a results dissemination phase. Regardless of this belief, in this doctoral research, the results dissemination phase successfully communicated the findings of the research. Moreover, it was important in demonstrating my willingness to be held accountable, even though at times the research team was welcomed without recognition, perhaps an indication of the community's inexperience with academics returning to disseminate their results.

Data dissemination is a significant phase of community engagement and applying CBPR principles to research. However, I feel this phase of CBPR needed more cultivation so that the community could utilise the researcher's data to lobby for their own advantages. Furthermore, in general, researchers should be obliged to return and share their findings to enable communities to be familiar with the research and empowered to take ownership of the data. The role of the researcher is to ask something of the community (i.e. participation, collaboration, input, etc.). However, the

dissemination of data is a key element where results can provide a community, in this case, the iTaukei community, with valuable data which can support better community outcomes.

4.8 CONCLUSION

In conclusion, the importance of the voice of a community and the need for them to be heard, cannot be denied. Engaging a community can prove to be difficult with many complexities in the process. Community participants tend to have everyday life pressures, such as the need to search for a livelihood, and this can understandably prevent or reduce their involvement in the research process. Thus, those who are active participants in CBPR tend to be the community members who are passionate about the cause or have time to devote to involvement.

When designing a CBPR, capacity building of communities and sustainability of the project must be topmost priorities. For this process to successfully occur there must be community engagement at all levels. There are, of course, many challenges to this taking place, as depicted in my thesis about the iTaukei community research. Some iTaukei community members were more involved in the process than others, and while some initially committed to sustainable solutions (such as the playground), eventually they withdrew their commitment and land for the playground being taken back. These are the sustainability issues that one is faced with in the field when involving a community and engaging them to create social change.

A researcher must question his/her own role in the research process and constantly seek to incorporate the community in the research. In addition, the community must own the research, and they must consider the

research question an important issue. The researcher must be open to criticism, question every step, and be humble enough to acknowledge mistakes. By doing so, the researcher will develop a critical self-awareness of their surroundings, the community, and the overall research question. This inner awareness at every stage of the research is a crucial characteristic for the researcher to possess, and will aid in the completion of a successful community engagement research project.

Chapter 5: Findings

5.1 INTRODUCTION

The previous chapter described the CBPR principles used to develop a community-based research project that involved a health assessment survey of a village, an intervention phase, the community perspectives of obesity and prevention, and dissemination of the preliminary findings.

The goals of this research were to identify the health problems in an iTaukei community and to understand the factors that influence current food practices, exercise levels, and behaviours contributing to obesity. Therefore, to achieve these goals, this research was designed to explore the socio-cultural factors related to food, exercise, and behaviours as well as attitudes, beliefs, and values concerning obesity in an iTaukei rural community.

To accomplish these goals, this research used the WHO STEPS survey and conducted purposive sampling interviews, as outlined in Chapter 3. The socio-demographic results, lifestyle risk factors, physical measurements, and interviews of participants are described after analysis using simple statistics.

The ANGELO framework, as described in Chapter 3, is used in this chapter to analyse and present the qualitative data derived from the interviews.

5.2 VILLAGE HEALTH SURVEY RESULTS

5.2.1 Demographic Characteristics of Survey Respondents

Demographic characteristic results provide a summary of the respondents' data by gender and age, by marital status, by education level attained, by employment status, and by income range.

Demographic variables

The demographic information of the survey respondents is summarised in Table 5.1. A total of 106 respondents attended the village health assessment survey. Gender distribution among the respondents was even, with males comprising about 51% and females comprising 49% of the total population. Just over a quarter (25%) of the respondents was between 45 and 54 years. The majority of respondents (70%) were married, while just 19% reported they were widows. Ten per cent of respondents had never been married, and 2 % reported they were divorced.

All of the respondents answered the education levels. Fijian rural schools are divided into three levels: primary school from Year 1 to Year 6, secondary school from Year 7 to Year 10, and high school from Year 11 to Year 13. After completing high school, some students go on to university. This is consistent with the respondents, with 42% having completed their primary and secondary schooling. Twelve per cent of respondents had completed high school, and 2% had pursued tertiary/university education. Very few respondents reported that they had not completed primary schooling.

The majority of the respondents (44%) were homeworkers, with the majority of these being female, while 37% stated they were self-employed.

Males were particularly likely to be self-employed, and more females than males stated they were unemployed.

Table 5.1.

Frequencies and Percentages for Demographic Characteristics

Demographic characteristic	n	%
Gender		
Male	54	51.0
Female	52	49.0
Age		
Under 24	4	4.0
25-34	14	13.0
35-44	20	19.0
45-54	27	25.0
55-64	23	21.0
65 and over	18	17.0
Marital status		
Never married	11	10.0
Currently married	74	70.0
Divorced	2	2.0
Widowed	19	18.0
Education level		
Less than primary school	3	3.0
Primary school completed	44	42.0
Secondary school completed	44	42.0
High school completed	13	12.0
College/university completed		2.0
Employment		
Non-government employee	1	1.0
Self-employed	39	37.0
Homeworker	47	44.0
Retired	5	5.0
Unemployed (able to work)	8	8.0
Unemployed (unable to work)	6	6.0
Income range per annum (Fijian dollars)		
Less than 2000	52	49.0
2000 to 4000	30	28.0
4000 to 6000	13	12.0
6000 to 8000	4	4.0
9000 or more	7	7.0

Among the unemployed respondents, 8% stated they were able to work while 6% said they were unable to work. Less than 1% of respondents were non-government employees, and 5% stated they were retired. The rate of response was less for the income range of the household. All income was reported in Fijian Dollars (FJD). Of those who responded, 49% earned less than FJD2000, 28% earned income between FJD2000 and FJD4000, with 12% of respondents in the FJD4000 to FJD6000 income range. Four per cent of respondents claimed they earned between FJD6000 and FJD8000, and 7% made more than FJD9000 per annum.

5.2.2 Behavioural Measurements

The descriptive statistics for behavioural measurements of the participants are summarised in Table 5.2. Overall, 45% of the total population surveyed indicated that they were currently smoking tobacco-based products, while 55% of respondents declared they did not smoke. Among the current smokers, 75% per cent stated they smoked every day, while 25% claimed they did not smoke every day. For the survey, unsafe drinking was defined as more than 60 grams of alcohol per day for males, which is equivalent to six standard drinks, and more than 40 grams (four standard drinks) for females. Each standard drink contains about 10 grams of alcohol (World Health Organization, 2011b). Almost 58% of respondents indicated they currently consumed alcohol, and 42% of respondents claimed they had not had any alcohol in the last 12 months. Further, the findings showed that 63% of respondents stated that on no occasion had they consumed alcohol products, while 37% indicated they had consumed alcohol in their lifespan.

Nearly three-quarters (73%) of respondents also indicated they consumed vegetables for six or seven days of the week, while the lowest consumption of vegetables was 11% for four to five days of the week. Similarly, 67% of respondents reported daily consumption of vegetable servings (two servings per day), while 26% stated they consumed vegetables once a day.

Table 5.2.

Frequencies and Percentages for Behavioural Measurements

Behavioural measurements	**n**	**%**
Tobacco smoking		
Currently smoking	48	45.0
Never smoked	58	55.0
Alcohol consumption		
Currently consuming alcohol	62	58.0
Never consumed alcohol	44	42.0
Vegetable consumption (No. of days/week)		
0–3	17	16
4–5	12	11
6–7	77	73
Vegetable consumption (No. of serve/day)		
1	27	26
2	71	67
3	8	7
Fruit consumption (No. of days/week)		
0–3	83	78
4–5	4	4
6–7	19	18
Number of serving per day (No. of serves/day)		
1	90	85
2	13	12
3	3	3
Type of oil/fat frequently used in cooking meals		
Vegetable oil	54	51
Lard or suet	2	2
Butter or ghee	2	2
Soya bean oil	46	43
None in particular	1	1
Never used	1	1
Fast food consumption (No. of days/week)		
0-2	97	92
3-7	9	8

During the survey most respondents indicated that, in a typical week, the highest number of fruits servings consumed per day was one, with 85% of the population claiming to do so.

In an average week, 12% of respondents stated that they had consumed less than two servings of fruit, with 3% claiming they had consumed three servings. Twenty-eight per cent claimed they consumed one serving of fruit per week. Similarly, the number of respondents stating they consumed fruit on one to three days per week was 78%, and on six to seven days per week was 18%. Four per cent of respondents consumed fruit on four to five days per week.

A high proportion of the respondents indicated using fats in cooking meals: 51% used vegetable oil; 4% stated they used saturated fats such as lard, butter, and ghee; and 43% stated they used soya bean oil. Less than 1% of respondents indicated they did not use any oil for cooking meals.

Ninety-two per cent stated they consumed fast food twice a week. Eight per cent of the respondents claimed they consumed fast food twice a week.

5.2.3 Physical Activity

The survey measured physical activity in two ways: an estimate of the mean physical activity as a metabolic equivalent in minutes, that is, minutes per week; and participants' physical activity categorised as low, moderate, and intensive. This included activity at work, while traveling, during sports, and during fitness and recreational/leisure.

The descriptive statistics for the work-related physical activity of the participants is summarised in Table 5.3. Twenty-three per cent of the respondents indicated they were engaged in low work-related physical activity in a week, while 29% stated they were engaged in moderate physical activity. Forty-eight per cent stated they were engaged in intensive work-related physical activity. The highest proportion of respondents for low levels of work-related physical activity, 12%, indicated they were engaged in low levels of work-related physical activity on zero to three days per week, with 7% claiming they were engaged in moderate work-related physical activity and 3% claiming to be involved in intensive work-related activity.

Table 5.3.

Frequencies and Percentages for Physical Activity

Physical Activity	**n**	**%**
Low work-related physical activity (days/week)		
0–3	13	12
4–5	7	7
6–7	4	4
Moderate work-related physical activity (days/week)		
0–3	15	14
4–5	3	3
6–7	13	12
Intensive work-related physical activity (days/week)		
0–3	18	17
4–5	12	11
6–7	21	20
Moderate sports related physical activity (days/week)		
0–3	11	20
4–5	5	9
6–7	11	20
Moderate sports related physical activity (minutes/day)		
15–40	12	22
41–90	6	11
91–120	5	9
121–180	4	7

Intensive sports related physical activity (days/week)		
0–3	12	22
4–5	3	7
6–7	12	22
Intensive sports related physical activity (minutes/day)		
15–40	12	22
41–90	6	11
91–120	7	13
121–180	2	5

Playing sports, moderate and intensive

The survey measured (see Table 5.3) playing sports at moderate and intensive levels per week. The respondents indicated that 74% did not engage in moderate or intensive levels of sport, while 26% engaged in both moderate and intensive levels of sport. A high proportion, 22%, of respondents played an intensive level of sport for zero to three or for six to seven days per week, while 7% played sport between four and five days per week. Additionally, 20% of the respondents indicated they played moderate sports for zero to three, or six to seven days per week, while 11% stated they played four to five days per week

Among the respondents, 22% spent 15–40 minutes a day playing moderate sports. Eleven per cent spent 14–90 minutes, while 9% spent 91–120 minutes and 7% of the people spent 121–180 minutes in a day playing moderate sports. Also, respondents reported 22% spent 15–40 minutes per day playing intensive sports, 11% spent around 41–90 minutes, 13% reported they spent 91–120 minutes, and 5% of participants spent 121–180 minutes, respectively, per day playing intensive sports.

5.2.4 Physical Measurements

Height and weight measurements were taken from eligible participants to calculate body mass index (BMI), which was utilised to determine overweight and obesity. Blood pressure (BP) was also taken to determine raised blood pressure. The descriptive statistics for the work-related physical activity of the participants are summarised in Table 5.4. Fifty per cent of respondents reported they had had their BP checked by a doctor in the past 12 months. The occurrence of newly diagnosed hypertension in the past 12 months was 68%, while those who did not have raised BP was 32%. Eighty-seven per cent of respondents indicated they had been checked for diabetes by a health professional, 21% indicated that they had had a diabetes history taken by a medical officer, while 79.3% had not had a diabetes history taken. Of those previously diagnosed with diabetes, 61% of the respondents indicated they had been diagnosed in the past 12 months.

Table 5.4.

Frequencies and Percentages for Physical Measurement

Physical measurements	n	%
Blood pressure checked by doctor		
Yes	53	50
No	53	50
Diagnosed high blood pressure in 12 months		
Yes	36	34
No	17	16
Diabetes checked by doctor		
Yes	92	87
No	14	13
Diagnosed diabetes in 12 months		
Yes	11	10
No	7	7
History of diabetes		
Yes	19	18
No	73	69
BMI range		
Normal	17	16

Overweight	36	34
Obese	53	50
BMI range by gender		
Male		
Normal	11	10
Overweight	25	24
Obese	18	17
Female		
Normal	6	6
Overweight	11	10
Obese	35	33
Consumption of Kava in last 30 days		
0	13	13
1–9	51	52
10–19	16	16
20–29	5	5
Everyday	13	13

Body mass index range

Including both genders, 50% of the respondents were obese and 34% were overweight. Combined, this means that 84% of the total population surveyed were above the normal BMI range of 25. Only 11% of males and 6% of females were within the normal BMI range. However, when gender data were separated, 25% of males and 11% of females were overweight, while 35% of females and 18% of males were obese.

Kava and snack consumption

The respondents reported that 93% consumed Kava, while 7% did not. However, 52% of the people consumed Kava every 1–9 days while 16% consumed Kava every 10–19 days. Five per cent of respondents consumed Kava every 20–29 days, and 13% consumed Kava every day. Interestingly, 13% of the people stated they had not consumed Kava in the last 30 days.

5.3 QUALITATIVE DATA FINDINGS

The current research had three objectives: a) to understand the factors that influence current food practices, physical activity levels, and behaviours contributing to obesity; b) to explore how rural social networks may be beneficial in preventing obesity; and c) to explore the socio-cultural factors related to food, physical activity, and behaviours, as well as the attitudes, beliefs, and values concerning obesity in iTaukei rural community and to identify priorities for interventions. Environmental factors identified by participants and suggestions for future study were collated respectively to environment type as a synopsis in the ANGELO framework. Factors pertaining to food intake were more outstanding and are demonstrated first, overshadowed by factors related to physical activity. Quotes are used to demonstrate two themes and several subthemes. On occasion, multiple quotes from several participants are utilised to support a certain point, while at times a single quote is used to illustrate a point.

5.4 FOOD INTAKE

Food intake was one of the themes that emerged from the data analysis using the ANGELO framework. Food intake was then categorised under socio-cultural, physical, economic, and political environment. Food intake has multiple influential factors, from food preparation to food intake, as described by participants below. Food intake factors are summarised in Figure 5.1.

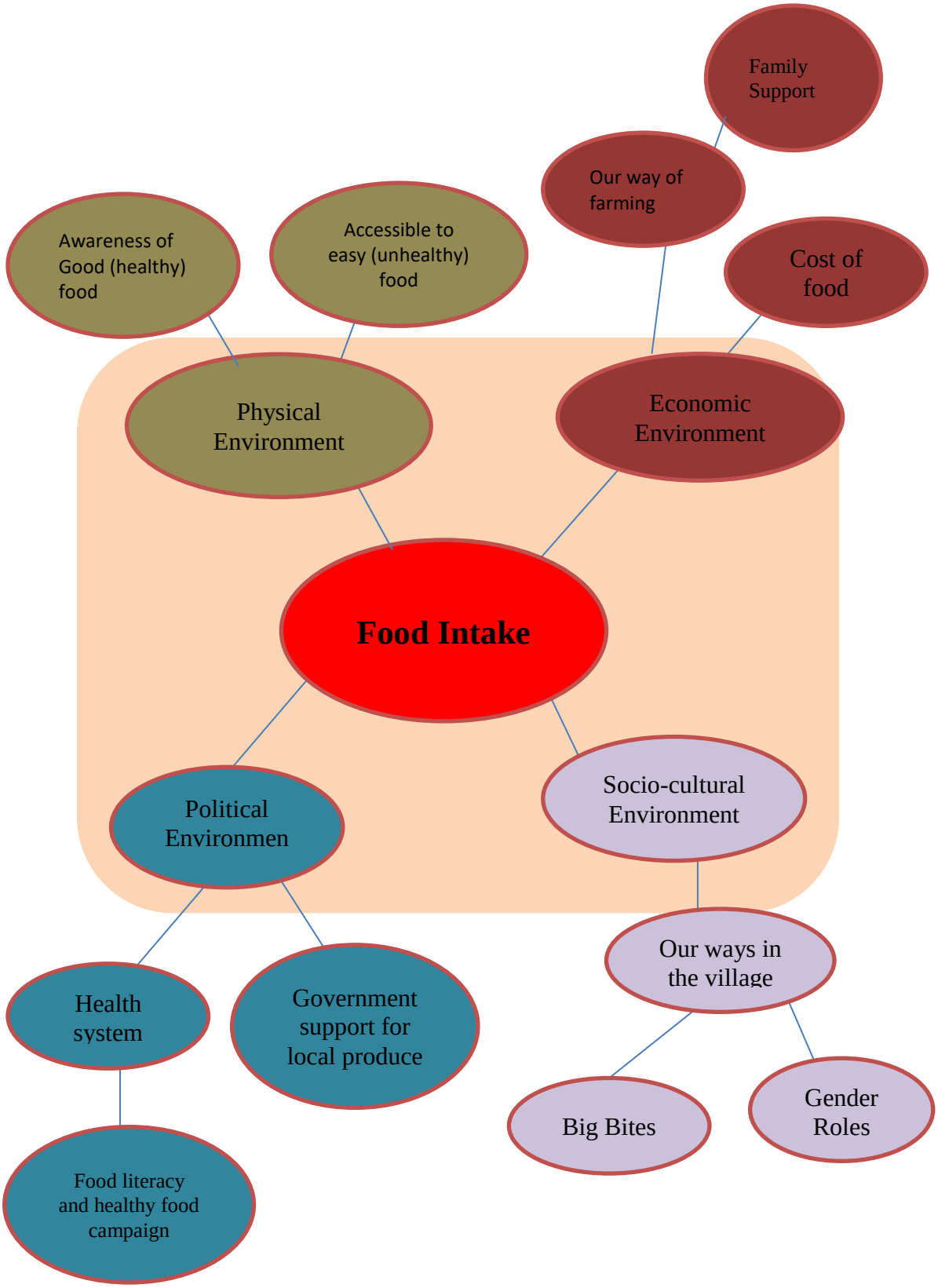

Figure 5-1. Summary of factors pertaining to food intake in the rural community environment.
Note: Individual factors influencing food intake were also discussed by participants but are not included above.

5.4.1 Socio-cultural Environment

Our ways in the village

Traditional food intake, which mainly consists of high in minerals and vitamins and significantly high in fibre, is a symbol of strength. Therefore, during the community *Talanoa* session participants mentioned changing of food intake patterns because of ethnic pluralism; this was due to the beginning of multicultural societies affecting not only the intake of traditional iTaukei food, but also eating habits. One female participant said that most people in the iTaukei village do not care about healthy eating as they live on a day-to-day basis. If these individuals had been diagnosed with a disease in the past, their focus on healthy eating diminished with time. The following comments were typical:

'Healthy food is … you know the good food that gives you good health—fruits, fish. Don't eat too much meat. We Fijians don't care what they are' (Participant 4).

'Mostly more vegetables like cabbage and beans but we really don't give a damn about planting vegetable. It is easy to plant, but we do not seem to care. We just have meat fish like we have meat fish.' (Participant 8)

Many participants described the influence of healthy eating practices, believing they can be role models for the families when it comes to healthy eating. Males are often encouraged to eat more healthy food as they do the hard work on the farm and on the sports field. Another participant said mothers always encouraged their sons to eat large amounts of healthy food so that they have enough energy to work hard, lift crops, and look after their families well. The following comment was typical:

‘My mom and when I eat too much on the farm as I work hard, so my mum always tell me to eat more to keep strong, and my wife always tell me don’t eat too much. My mom brings lots of food for me to eat and she says we need to look after each other.’ (Participant 14)

Some participants described eating in large quantities helped them gain strength for vigorous farming jobs, while other villagers believed that it was good for their bodies. Participants also described that eating is part of their culture, which indicates the more social they are, the more food they will eat. One of the male participants stated:

‘If you have a big body, you have a big work. I eat too much on the farm as I work hard, so my mum always tell me to eat more to keep strong.’ (Participant 14)

Another participant stressed that the iTaukei community do not pay attention to their health issues unless they get sick and described how being healthy is seen very differently in the socio-cultural context of the iTaukei community. Some participants described the iTaukei community perception of being healthy is about eating large portions of food and having multiple servings during mealtimes to gain strength. The way that the iTaukei culture is structured both reflects and perpetuates the notion of large meals and big people as this shows the relative rank and status of individuals within the community.

One participant spoke about iTaukei food types differently when she mentioned that root crops are highly valued throughout the village, as is protein, and that these are consumed in large quantities, especially on ceremonial occasions. Several other participants confirmed this when they

spoke of prestigious or high-status foods in iTaukei villages, which include root crops and proteins, and that these are highly valued.

Gender roles

Some participants described the gender distribution of food, with male members of iTaukei families receiving more high-status food and greater quantities than females. She/he further explained that seniority and gender often intersect to determine status, which is then reflected in eating patterns. For example, older iTaukei men often receive the most prestigious food and in greater quantities than younger males, females or children. Some participants also explained that the people in the village believe working at the farm is hard and needs lots of energy. This compels them towards binge eating habits, mostly among the females. The following comments were typical:

‘They go to the garden, they weed the garden, they get the firewood, and they go fishing then … taking part in physical activity but when it’s eating time that is the time when they can’t control. It’s the time that they enjoy eating; I love my food …’ (Participant 8)

‘Normally that’s culture. That is the Fijian culture. Men used to eat first and then the women will eat later but normally eating later that means everything that’s left they are going to have it.’ (Participant 7)

Most participants mentioned that male members in the iTaukei communities are responsible for feeding their families through farming jobs, while women members restricted themselves to looking after the house and performing domestic duties. One participant explained that in a traditional iTaukei family there are typical cultural practices that remain prevalent.

Another participant explained that food is distributed based on the relative rank and status of both the donor and the recipient.

Another participant described how, within the village setting, the roles of gender within the families were identified by participants as duties that were linked with running the household. Mostly, women dominated the domestic responsibilities such as collecting firewood, preparing food, looking after children, and other chores in the village while men generated income and fed the nuclear or extended families. She/he explained that gender divided the overall responsibilities well; however, with regard to eating habits, women tended to be more likely to eat large amounts of food even though they were aware of, or had been educated by health professionals about its hazardous effects on health. The following comment was typical from the respondents:

'Not good but Fijian women, we love eating. One of my colleagues used to say I love my food. She's a very big woman. Never mind how much we tell her to cut down on her food. No, she will always say I love my food.'
(Participant 8)

Big bites

One participant described how food plays a central role in the social life of the iTaukei villagers, from ceremonies shared among close friends and family, to those shared with visitors and strangers. Another participant emphasised that sharing meals with others is an important element of their social life, and people invite each other to meals to eat together. She/he conveyed that food brings people together and unites them through values of caring and generosity. A similar discussion was led by another participant about the expectations in a 'give and take' relationship that is demonstrated

among iTaukei villagers through meals, snacks, feasts, and gifts. Another participant reflected about the important use of food in exhibiting socio-cultural values in the gatherings held in the community, where large quantities and varieties of food are shared. She/he mused that in most food-related events, the quantity of food is striking, and villagers speak proudly of this practice as: ‘The village does it big’.

One participant emphasised that feasts are especially important for sharing food in the village. She/he described feasts as *Mangitilevu* that normally feature foods cooked in the traditional *lovo* (earth oven). Another participant stated that *Mangitilevu* includes feasts that range in scale from Sunday dinner to community-wide events because she/he considered that, for many iTaukei communities today, Sunday *Mangitilevu* are special occasions because most people do not cook *lovo* every day. This participant also added that *Mangitilevu* is also important in the celebration of important events. Another participant aligns *Mangitilevu* to an event held in honour of events, such as baptisms, birthdays (especially 21st and 60th), marriages, haircutting, funerals, dedication or opening of a building or community project, the receipt of a chief title or other honour, family reunions, the arrival of visitors, and the departure or arrival of people from overseas. She/he laughingly mentioned that during the *Mangitilevu*, individuals tend to eat large portions of food from a huge variety of dishes. The following comments were typical:

‘Yeah, we eat a lot of meat in the Mangitilevu*. We eat it mostly here, every day. Mainly here we have beef meat, so it’s all fried, curry … In that occasion*

in the Mangitilevu*, we help ourselves to it so we can have three/four servings.'* (Participant 13)

Another participant also aligns *Mangitilevu* to casual gatherings of people where they share food with each other. The participants mentioned that the village does not need an excuse to put on 'a big bite'. The same participant mentioned these kinds of gatherings occur after church, sporting events, dance performances, and whenever people decide to get together for a combined meal. Some participants suggested these events are similar to a Western 'pot luck' dinner where the instruction to 'bring a plate' is given to each guest, which means to bring a dish that everyone can share. The following comments were typical:

'Because here we normally eat roro and bele (green leafy vegetables). When they go there, they have a feast, everything in the Mangitilevu. So that's why people you know eat more there than at home.' (Participant 13)

'They have different dishes there—curry, stew, chop suey, fish, and they have it on special occasion but in the home here in the village, we just have one type of variety in lunch and dinner.' (Participant 8)

Participants also said that the village feast, in iTaukei communities, is considered a traditional social gathering, where groups of males and females sit in the shed or community hall and enjoy the food that is prepared together by the whole village. One participant said this food is usually free for guests and contains large amounts of fat, salt, and sugar. The following comments were typical:

'Some when they are sitting on the table like this is talking to each other. For other time we did not even know that we eating lot of food and just having fun.' (Participant 14)

'So there is a little effect as we do lots of takeaway pack from the ceremony. When you go to the Mangitilevu *like that, you normally put the fatty food and in large amounts. People in the village eat as much they want, it's free, and the food is not healthy as well.'* (Participant 11)

5.4.2 Physical Environment

Awareness of good (healthy) food

The study participants had a wide range of perceptions about eating good food. Some participants described how they always consume locally grown green vegetables and seasonal fruits. The community perception related to healthy eating is eating lots of fruit and vegetables. Female participants further exposed that while cooking the family meals every day they prioritise raw materials to prepare the food dishes. As one participant stated:

'I really tried every day to have healthy foods on the table. So it can provide good health and my family to stay healthy.' (Participant 1)

Participants expressed concerns about the importance of eating healthy food but argued that since the farming lands are situated far from the village, people had to consume processed foods in larger amounts instead of eating fresh vegetables and fruits. The following comment was typical:

'Our farm is far from the village, and sometimes we are too lazy to go farm to get our vegetables instead we buy tin fish and noodles for our meals.' (Participant 14)

Many participants expressed that healthy eating is good for their families' wellbeing, as it keeps the body, mind, and soul healthy. Another participant emphasised that consuming local produce is cost-effective, and it is more readily available than processed food across the iTaukei villages. This participant went on say that villagers are mostly aware of healthy eating practices; however, to what extent they follow these healthy eating practices has been an area of much speculation. The following comment was typical:

'Yeah, I cook healthy food for my family. Mainly I cook … you know I just make soup like … I usually do curry or ...' (Participant 9)

In contrast, another participant discussed primary school healthy eating education and explained that they were primarily concerned with eating three categories of food, which includes eating the right balance and portion of health, energy, and body building foods. The same participant elaborated, stating that healthy eating is one of the most important things can keep a healthy life, and good, local, natural foods are abundant in the village, and they are very lucky to have so much available to them.

Healthy eating is one of the most simple obesity prevention that can do help lower the risk of many diseases such as diabetes and cancer and will ensure people feel great in body, mind and spirit, which was discussed by most participants. Another participant spoke about the three different food groups that constituted a balance diet. These were: energy foods (root crops), bodybuilding foods (proteins), and health foods (fruits and vegetables). One statement on good food eating was very enlightening. The participant said:

‘Most of thing I thought, I have to cook three types of body building food for us to eat in our family every day, three kind of food and drink.’ (Participant 5)

Access to easy (unhealthy) food

Despite their widespread knowledge about food, several participants stated that communities are now turning away from traditional staple diets to more processed foods as families and individuals are making choices for taste rather than for health. Participants also discussed the diversity of factors within the home environment that encouraged unhealthy eating behaviours; among the strongest factors are availability and accessibility of junk food, home food preparation, and taste preferences. Participants indicated that home prepared food was difficult compared with the availability and taste preferences associated with easy food, which is fast to cook even though it contains large amounts of fats and sugars. Another participant agreed that ‘junk’ food consumption had successfully penetrated the lives of the iTaukei community, owing to compelling media advertising. This participant recollected that advertisements are found in many forms such as television, street advertising, local iTaukei newspapers, word-of-mouth, and even via the influence of families living in urban areas. Some of the responses of the interviewees related to this are given below:

‘Normally for breakfast we buy flour rice and tin stuff, tin meat, tin fish, sometimes frozen chicken.’ (Participant 8)

‘I have to make mix vegetables, but usually, we do not have that. I just put noodles, only noodles, and potatoes because it is available from the local store.’ (Participant 13)

‘They do not want to eat healthy food because they are getting everything. Taro, bele (green vegetables) is different in taste with food that we buy in the store. Sometimes we see in the TV about food that taste good or in our newspaper. They prefer the taste than quality. People do that especially us in the village. It taste better; they go for taste.’ (Participant 10)

‘Most go for the taste rather than the value of the food and the nutrition of the food.’ (Participant 5)

Another participant explained that the recent introduction of electricity in the village has meant that people have been able to stockpile frozen items in the freezer. One participant stated that illegal mini-stores operating in the village have increased, and these mostly sell junk food. She/he believed the easy access to easy food has compelled the villagers to choose unhealthy consumption patterns. Another participant agreed with this observation and stated that now there is an alternative, people buy junk food, rather than going to the farm daily and harvesting their own fresh vegetables. She/he also believed villagers thought junk food was tastier, more satisfying, and faster to cook. The following comments were typical:

‘Noodles and tin meat, tin fish. Children always come and buy cold soft drinks like that instead of drinking water, drinking from the coconut or drinking sugar cane but might be very lazy to get it.’ (Participant 14)

‘Processed food … There are so many people selling groceries in the village. Mostly noodles, tin fish so maybe … The village has used to quick foods. People in the village do not go to the farm everyday, which is why they don’t eat fresh vegetables. We buy Noodles, tin meat, tin fish and bread from the village store. Mostly in the morning, they just have bread, biscuit. They have

it with tea, but it does not give anything to their body. People are buying this because of less of healthy food; people are lazy, very weak.' (Participant 3)

Another participant explained that the recent introduction of electricity in the village has meant that people have been able to stockpile frozen items in the freezer. The following comment was typical:

'I believe it is very easy, fast cook, good to eat. That is the first one and time is changed. Electricity before, I believe before you came here last year we had lantern but now electricity in the village. Everything is available and very fast. I believe that's why people come for junk food.' (Participant 12)

5.4.3 Economic Environment

Our way of farming

Family support

One participant explained that the families are no longer as involved in farming as they were in the past. The same participant went on to explain the iTaukei community structure, stating that there are different clans, and these no longer support each other in physical jobs and farming. This participant identified that people are more reliant on processed food in recent times, along with planting cash crops, which leads to more profits so that their families can afford even more rich-in-calories foods. The same participant also stated that there is no shortage of land in the village as they own the land themselves, and do not have to pay any rent, and that should mean that the villagers would be more interested in farming than doing anything else. The following comment was typical:

'For our fitness plan because in the village we have plenty land, and we can plant our own food and vegetables.' (Participant 6)

Another participant described that the people in the village are not doing enough farming to feed their families, as they are increasingly being either inactive or too lazy to engage in physically demanding jobs. The following comment was obtained from one of the participants:

‘Yeah still mostly using of the time. In the village, they are not using time planting and go to farm and do something more better than nothing. They are lazy. I have noticed ladies sit in groups’ whole day and yarn.’ (Participant 3)

Several participants mentioned that their farmland is located in a bush area, so it takes them longer to access fresh vegetables. They also mentioned it is difficult for the women to go far away from the village because of family responsibilities and the need to take breaks to look after the children and to provide them with meals after school. Another participant explained that backyard gardens have the practical benefits of providing a source of fresh food that can ensure a healthy diet and help reduce food costs, as well. She/he suggested such provision can help avoid wastage, even if only a small quantity of a vegetable is grown and consumed. Similarly, one participant raised concerns that people needed to engage more in backyard gardening around the house, stating that this would be beneficial for their health along with providing them with easy access to fresh vegetables. The following response of one of the respondent is noteworthy:

‘Backyard gardening yeah, they can plant just around the house or on the farm. We need to start our own little garden around our own house instead of planting flowers.’ (Participant 6)

Cost of food

Participants explained that they have less income than people living in urban areas, which stops them from buying good quality and healthy food products. They buy cheap options available at supermarkets and takeaways in the city or buy from the local mini-store in the village, which provides the option of buying food that is within their low-income budget. Therefore, it seemed participants felt those with low incomes could not afford good quality foods in the supermarkets.

The majority of the participants across the community expressed thoughts about selling their fresh produce in the city market and buying cheap processed food from the city supermarkets. One participant described this as a common practice because it is cheaper than buying in the mini-stores, which sell junk food at double the city price. This participant then added that the transport challenges have recently been reduced, as there is now transport three times per day to and from the village. The following comment was typical:

‘Most of us in the village until now do not use local food nearly every day. There is daily transport from the village to city. So they just go to the city, sell our fresh vegetables and buy tin fish, cook it, boil, open it, eat without vegetables that’s why we eat mostly to tell you the truth. That’s why plenty sickness come from the type of food we eat everyday.’ (Participant 4)

Some participants explained that they go to the city and eat cheap food, which has high levels of fats and sugar levels. One participant stated that in the villages there is a shift from their traditional staples and side dishes are being abandoned in favour of easy-food diets containing a higher quantity of

sugars and fats. A different participant stated that when people have access to more financial resources, their dietary habits change a great deal. Many participants stated they are eating green vegetables as part of their daily intake. Another participant mentioned raising animals for their own consumption. This could be due to a lack of finance in an area where the average income per year is less than FJD2000 per household, as per the results of the village health assessment conducted by the researcher and discussed previously. The following comment was typical:

'We raise some chicken but sometimes we kill it for … We have that for our dinner. When we raise animal it is chicken. But mainly we have that for special occasion you know. Not for everyday…"'(Participant 13)

Other participants also believed the staple foods of iTaukei communities are mostly rich in starch and protein, and that they are readily available in the village as people plant their own crops and consume local products. The participants also stated that these crops are local produce, they cost nothing to the families, and that they are consumed in large quantity during meals. The following comments were typical:

'You have to mix with other food everyday eating. Not dalo, dalo, dalo every day or cassava, cassava every day. Sometimes you use rice, give us healthy food. Daily vegetables, we grow local everyday fresh and we eat in large amount because they are free for my family.' (Participant 3)

'Eat good food, fresh food, local food. Mostly we're eating healthy food. For me vegetables leaf, fish from the river. You go locally. You just eat what you plant from your garden or plant what you eat.' (Participant 13)

Subsistence farming is an integral and dominant feature of iTaukei communities. Most of the participants mentioned they are self-employed and completely dependent on local farming to feed their own family, and the usually take their crops to city markets to generate income for their children, pay their school fees, and meet other expenses.

5.4.4 Political Environment

Health system

Food literacy and healthy food campaign

One participant spoke about the benefits of healthy eating, saying there is a lack of knowledge and understanding around healthy eating by most people in the village. This participant elaborated on her perception about good food eating, saying it is green vegetables that make the body strong and keep away the diseases. The participant stated:

'I think the benefit is good for your health, body will feel great, you can do everything if your body is well.' (Participant 6)

Participants also believed that they lack knowledge on healthy eating and its benefits for the entire family. One participant stated that the village has a communication and engagement issue, and this is the main barrier to accessing the health system. The participants spoke again, during the feedback process, about the challenges identified due to lack of communication targeted to the rural villages, as they believe this is the main cause of low health literacy in the community, along with a lack of opportunities for ongoing engagement. The participants, during the feedback meeting, discussed their disapproval of temporary projects, or one-off

activities, and highlighted the importance of ongoing health activities. The following comment was typical:

‘We can have sort of an idea when people like you come to the village and explain to us importance of these things ... like this when sitting in the hall, we want you to explain to us and those people they not want to come so you remember that think of a way that attract us to come when you stay in the village, the people they think that when you come they will think that some other thing is important then what you have for them so you can find out a way that you can do to attract people to come because you telling us a very important thing to do here without that we finish gone so you must thought a way that people will come, you know people like this if you deal with people in the town than in the village is different you say it like that they will come coz they know this is good here they thought something else is important than you people what you want to tell us so you must think of a way think of a way like that i don’t know which way…’ (Participant 10)

The participants attributed obesity and being overweight, poor eating habits, and poor health knowledge about diseases to the lack of engagement with the health system. Some of them discussed the need for healthy lifestyle campaigns to be culturally relevant, for information to be culturally tailored and translated, and the need for more community education. The need for culturally tailored nutritional information was an important theme during the feedback process. One participant gave a good example of the lack of knowledge villagers have about the importance of healthy lifestyles when he/she said that medication could ‘neutralise’ the effect of bad dietary habits. The following comment was typical:

‘It’s already done. People from the health will do what they are supposed to do to them. While I’m here, I’ll tell the doctors at health centre that they have here most important things to be done. Here they are doing it. Even you explain to them they do not do. Workshop is already conducted in the village. This village they already have good plenty workshop all saying the way of life ... young boys young girls eh the way they should take care themselves the way it’s coming now the disease eh only talk here so the most simple thing is to be done some hear it then just think about it and after that they go like that the other way so this good for them to come the way they are doing it now like you people is good to come and tell us but the doing and not doing is us then only the blame it is on us and only us will receive the receiving end.’ (Participant 10)

The participants also discussed a prevalent mindset in the iTaukei community that people only need to observe healthy lifestyles over the age of 50. In their opinion, until a health problem exists amongst the men or women, no precautions are necessary. One participant spoke about the belief held in her families that health had a low priority among younger and middle-aged people and that economic issues carried more weight. The participants mentioned that there is a lot of healthy eating information on TV and radio, but people in rural areas follow their own timetable and often miss significant information. One participant explained that not every household could afford to buy a TV and radio. One participant summed up a widespread problem in the community when she said that the people do not understand the ingredients used in processed products and disregard the hazardous impact of hidden sugars. The following comments were typical:

‘It is only reaching people who are exposed to this media. Those who have no access to those kind of media, they are left in the dark.’ (Participant 6)

’Like what I said, conducting awareness programs down to the grassroots to these people in the village because they eat whatever they want to because they don’t buy it like dalo, cassava, fish. When they bring the fish, they fry and put it in coconut milk again. So, if they can be … yeah people try to come down to them.’ (Participant 8)

‘The health ministry can, if they really want to bring it down to these people then they can be in the radio, they can see it over the TV. What they need is from horse’s mouth to actually see it. Some of them can come to conduct workshops I think or whatever we can call it.’ (Participant 5)

Similar responses were received in the feedback process where diabetes, coronary heart disease, and obesity were referred to as the most prevalent health problems in the iTaukei villages. There was also a discussion about lack of information on the causes of diabetes, and that most iTaukei participants’ perceptions about unhealthy foods only relate to sugar. Another participant explained that iTaukei people’s reluctance to seek medical assistance and the tendency to wait until a health problem becomes urgent were seen as contributing factors to poor health. The following remarks of an interviewee further explained this situation:

‘You (researcher) can come back and do some workshop and some training for the community to let them know exactly the way life should be. Most how to have good healthy life as it is important to our community. I know people in the village die very early with diabetes, heart attack and stroke. I want the dietician to come down to our village and do workshop with women about

healthy cooking as in the village women are cooking for the families. Because I have observed people in the village do not eat fresh vegetables and fruits in a day even though they grow them as mostly village people take their fresh produce to the city market and sell it and bring home process food, which has large amounts of salt and sugar. I think they do not know about fresh food is good for their health instead they want to live like their families in the city who eat takeaway food and get sick. Most of our people in the village are less educated to understand about healthy food and doing exercise to keep our self-healthy and free from diseases. It is being helpful if MOH [Ministry of Health] and ministry of agriculture do workshop in the village and advice the village community the benefits of local food that we grow in our farms about local. The village people are afraid to ask rather than just listen to ask about health eating and doing exercise as woman can do some light exercise in their house as well.' (Participant 3)

The participants also projected that the local health provider only visits a village with the objective of filling the paperwork to meet their key performance indicators, and the reports are filed for government auditing to give evidence that the job has been 'done' on behalf of the health provider. Community feedback was loud and clear during the results dissemination phase, as they demanded that the local health providers come down to the community level to conduct sustained health promotion activities. Participants raised their concerns that health-related information was only given to them by the medical officer when they went to local hospitals, and that they are sent home with pamphlets on healthy eating in the English language. Additionally, the village church pastor elaborated that there is a lack of

culturally tailored health promotion targeting the local communities. The following comments were typical:

‘Maybe lack of information. They do not know … They lack the knowledge of the value of food and what importance of the food—type of food that they eat will bring to the body.’ (Participant 8)

A few participants linked the lack of culturally tailored health promotion, the lack of community education and effective dissemination strategies to healthy outcomes for the iTaukei community. Similarly, one village elder participant felt that there was a lack of general community education, health promotion, or simply any communication from local health providers specifically targeted at the local community level and that this is a major concern. The participants also discussed the need for culturally tailored information content and culturally appropriate dissemination strategies. The following comment was typical:

“They (local health providers) just come for the paperwork. They just do the paperwork then go back and the village people just go in their own routine again. Normal one. If they put the local traditional cultural awareness for people which is culturally acceptable and apply into practice they can work it.’ (Participant 12)

During the process of obtaining community feedback, it was identified that a lack of general community education, health promotion, or any communication targeted at the community, was the leading cause of low health literacy in the community. The participants discussed the importance of incorporating cultural issues within community education programs. This reflected people’s personal experiences with programmes that are not

culturally competent and therefore are inaccessible. During the preliminary dissemination phase, communities identified a lack of communication and engagement as the primary barrier in the health system. All iTaukei participants identified a lack of communication targeted at the local iTaukei community as the main cause of low health literacy in their community. The lack of ongoing engagement was also discussed, while common disapproval was indicated regarding temporary projects or one-off activities, highlighting the importance of on-going health activities. The following comment was typical:

‘Because they [Ministry of Health] can start ongoing project rather than start and never come back. They can talk into a village meeting. We can push it up to the village meeting. Health people don’t talk to the village people or come to attend our monthly meeting even they were invited but were postpone due to their other important agenda.’ (Participant 12)

Government support for local produce

Some participants discussed the lack of government support when it comes to growing local produce as they feel they have been left out from other communities who have easy accessibility to roads and transportation. During the community feedback process, almost all participants mentioned government support for sugarcane and crops that go to many western districts of Fiji, and overseas donations, infrastructure development, and support payments that reduce prices. Another participant reflects that planting local produce such as healthy fruits, vegetables, and other seasonal crops receives no government funding support in the village. She/he believed the lack of government support was reflected in the lack of interest from the

local people to do farming and encouraged them to consume cheap food from the mini-stores in the village.

A common experience shared by participants was how current government agricultural rules had influenced food production environments that are less healthy for the low-income families in the village. Some individuals mentioned farming and healthy eating rules need to be taken into consideration with local health promotions programs, while others agreed local farming and healthy eating rules should be applied for the health and wellbeing of the community. Participants said some of the changes needed support from the local iTaukei government to eliminate health disparities between hard-to-reach villages with low incomes, and those villages that have lavish access to transportation and adequate resources.

Another participant highlighted that some people in the village do not possess knowledge of seasonal farming practices. Another participant also mentioned the issue of being largely cut off from the benefits of a market-oriented economy, and that the lack of education prevents them from gaining access to information that would help them know their rights and improve their living standards. The following comments were typical:

‘I have my suggestion is you know the government should send a group to come and teach about farming, healthy living and exercise. We people are very far from city and it’s hard for us to go to city and find information.’(Participant 14)

5.5 PHYSICAL ACTIVITY

Physical activity was another theme that emerged from the data analysis while using the ANGELO framework. Physical activity was then categorised under socio-cultural, physical, economic, and political environment. Participants described the factors influencing physical activity that contributed to obesity. Physical activity factors are summarised in Figure 5.2.

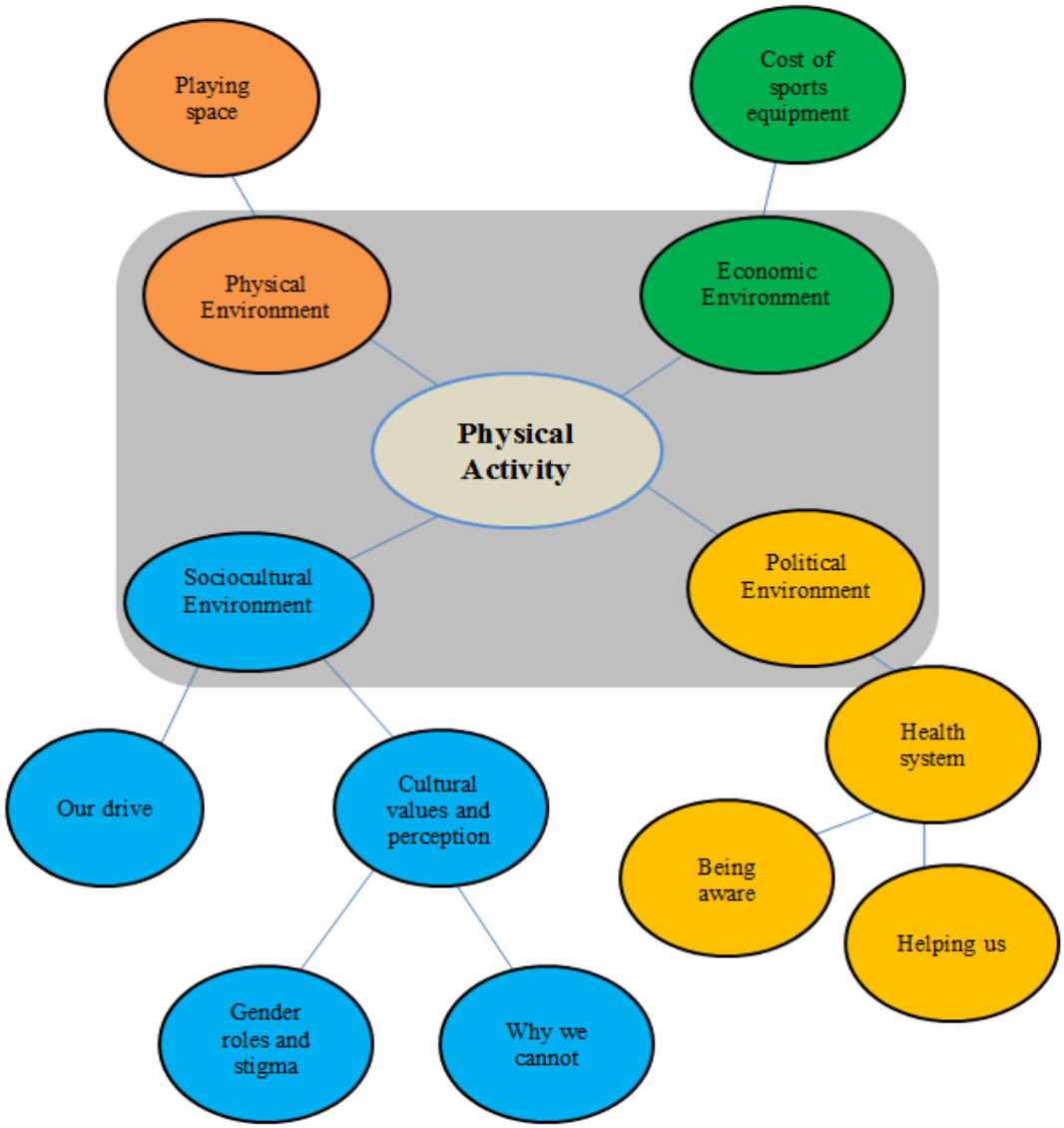

Figure 5-2. Summary of factors pertaining to physical activity in the rural community environment.

Note: Individual factors impacting physical activity were also discussed by participants but are not included above.

5.5.1 Socio-cultural Environment

Our drive

Unanimous agreement was obtained from all participants of the study as they described motivation to be one of the most significant barriers. A few participants talked about the need to create awareness among the iTaukei population regarding the benefits of physical activity and the importance of healthy lifestyle changes. Families and friends of participants also agreed with the idea of creating more awareness among the villagers.

One participant explained that it had been a difficult task to motivate family and community members as it was up to an individual to decide how much physical activity should be undertaken. The same participant acknowledged that an influencing factor was the peer group, or support, around an individual that motivates him or her towards healthy eating habits and physical activity. Another participant stated that if a person surrounds himself or herself with people who know the importance of good health and healthy lifestyles, then it is more likely they will themselves engage in these practices. A few participants went on to explain that there has been a lack of incentives and a lack of social support from peers to motivate the community when it comes to physical activity, and that this leads to lack of self-care. The following comments were typical:

‘I think if I go and do exercise, they will say “oh she is like your grandmother, why did she want to do that?” you know people talk like this, and this puts me off from doing exercise.’ (Participant 13)

‘It was lack of motivation from the families and others.’ (Feedback from unknown participant)

This participant spoke at a length about youth groups and women’s clubs that can design programmes for the community to improve wellbeing and encourage physical activity. The same participant spoke about iTaukei community being very sociable, and they would like to create a walking group within the community.

Participants also recommended having healthy living programmes introduced in their club to motivate the community members. The following comments were typical:

‘Like we can have a group, a physical activity group, you know a women’s group. They can have, maybe … Back in the village, they have their own women’s session and if the program of physical activity can also be included in their program especially for them to … or even in the morning, about five o’clock or four o’clock when they can take a morning walk together, everybody as a group. I think that will motivate them rather than be individually it will be more fun too to go as a group.’ (Participant 3)

Participants believed their attempts to be motivated for physical activity to be more difficult than changing their diets. All the participants at different times had taken physical activity seriously, had been committed to walking or biking, or had tried to walk on a daily basis. They also described physical activity in terms of outdoor activities, such as fishing and working on the farm, and had lost significant amounts of weight in the process. Several participants spoke of failed attempts at physical activity and how difficult to schedule consistent physical activity into their lives.

Cultural values and perception

Gender roles and stigma

One participant discussed married females' feelings of fear of the elders in the village while doing physical activity, resulting in village women staying at home and looking after the family and cooking for the family rather than participating in any form of physical activity. The same participant described that these are the traditional roles of women in the village. The participants made the following comments:

'Females yes. For the females. You ask Aquila why you so that the last time when you stay here not more females attending the volleyballs that's the main reason, one of the reason our customs, they are traditional. We are not allowed to go there because we are marriage. We finish our peer groups. That is the end of fun. You understand? That's one of the reasons. You just stay in the house do cooking, fishing. That's our role—women, females. Most of us don't do activities, physical activities like that. In married … while you're married you can't go and do physical activity.' (Participant 4)

'Yes it is a culture for Fijian (iTaukei) you know the girls to stay home, only the boys to go and play. That is our Fijian culture. Once you married, for you to look up to the family the girls. You're not supposed to go to the playground because the playground is only for the men.' (Participant 12).

Another participant elaborated about women not being allowed to associate with men in the village to play sports. This participant further explained the relationship between men and women in the iTaukei kinship culture, where women are not allowed to have direct communication with their uncles (*Momo*). Significantly, some participants linked wearing of

clothes as an issue for the females in the village as they need to wear a long dress (long pants or jeans are not allowed) that will not show their whole body. Therefore, it is difficult for the females to play sports or do physical activity with males in the village. Another participant reinforced the above statement and explained how gender segregation is a major factor, as females are not allowed to wear short clothes, or expose their body parts while playing sports, and this stops females from playing sport with males. The participants made following comments:

‘Sometimes when we play together like the men and the girls, sometimes we have our brother there because the Fijian protocol for the girls. They are brother they are not supposed to talk to them like the cousin. When your uncle is playing, you are not supposed to go and play with them. That is our Fijian culture. It’s like a taboo.’ (Participant 12)

‘Yeah, I am always talking to my momo (uncle) but woman are not allowed as it is a cultural thing that females respect the momo and don’t talk back to them.’ (Participant 14)

The females perceived their advantages and priorities were surrounded by cultural practices and expectations, so it was not just a simple matter of not being willing to participate. Another participant mentioned differences in the way physical activity is perceived in the rural villages compared with urban settings, where she states it as a different way of life.

Why we cannot

One participant explained how the kinship system is an essential aspect of iTaukei life: the ways in which people interact with each other is based upon their relationship to each other within the family unit. She/he mentioned

that respect and avoidance relationships are critical to the kinship system. The same participant explained that respect is based on three main concepts: age, gender, and social distance. Another participant confirmed this, saying that the older the person is, the more respect they command, regardless of gender or social rank. The participant then went on to describe the amount of respect displayed also depends on the amount of social distance between people.

Another participant acknowledged that people who interact with one another on a regular basis tend to be more relaxed and less strict about the proper respect relationships. She/he also mentioned that people who do not see each other as often, and are less familiar with each other, follow the expected rules more stringently.

Another participant considered there was a lack of support for women from the men in the village. This participant explained that females are always left out of the decision-making when it comes to woman's wellbeing, making them more vulnerable and less confident in self-caring and resulting in females not being allowed to play any sports with men in the village. Ironically, this participant uses the examples of sport as an integral part of the culture of almost every iTaukei village. The same participant acknowledged that understanding the importance of sport for women, and empowering women, is often ignored because sport is not commonly perceived as an appropriate or desirable recreation for women. However, playing sports is a perfectly acceptable social activity for males in the village.

Another participant explained the existing socially acceptable ways of expressing what it means to be a man or a woman in an iTaukei socio-

cultural context and how that plays a key role in determining access, levels of participation, and benefits from being physically active. Participants made the following comments:

‘It’s always all boys together to play rugby and this is how we socialise every evening in the playground. We do not need unisex playground. Women need to cook and look after the kids during the evening so they stay home.’ (Male Participant 14)

‘I don’t know if there is no custom or but we are not interested on it because we haven’t seen it in many village. I think many custom when you get married you just stay home look after your kids and everything but for giving you time for sports it’s not ordinary. (Participant 13)

‘I think the village too does not have deep concern about the health of the woman, mainly. If the village committee they have consent they can encourage us, they have … You have a gym there for woman. I think not …’ (Participant 3)

‘Yeah.. But… aahh… its normal everyday as we build up our friendship with other men but you have to go and play rugby, volleyball but I have seen TV and it says to do 30 minutes of exercise every day for my own life, for my own sick. I have to do it for each other as friends. We meet every afternoon in the playground and support each other to keep fit. This is a more of a social gathering for the men in the village while playing rugby or volleyball. This helps us to be motivated to do exercise.’ (Male Participant 2)

Some participants also believed that there is a perception held that families and the community are not supporting the females to do any physical

activity. The female participants confirmed that they wanted support from village elders to do physical activity and that due to iTaukei customary practices and respect for elders, they feel isolated, lack freedom, and feel neglected by the community. This can be seen from the following quotes:

‘They (elders) looked at us, we are not a girl. We are not allowed to go having do that volleyball, playing, netball. Only females. The males no. They got freedom to go and play.’ (Participant 4)

Another female participant expanded this perception, saying that males in the families hamper females from doing physical activity, advising that once a female is married, she is no longer supported by her husband to take part in sport, as a woman’s role changes upon marriage; however, the male does not lose his physical activity privileges. The following quote demonstrates this:

‘Yes, it is caused by the … our families and sometimes the men of the family they stop the ladies to go to the playground. That is our Fijian culture. Once you married, for you to look up to the family the girls. You are not supposed to go to the playground because the playground is only for the men.’ (Participant 12)

Older females mentioned that, regardless of their own health requirements, they had never in the past paid attention to, or heard messages about, the benefits of physical activity to one’s health or that undertaking physical activities will bring better health and wellbeing to the community. Interestingly, another participant identified that men in the village need to be informed about the benefits of physical activity and creating recreation facilities for female health, as they mentioned this would support

empowerment and encouragement. Some participants said there is a need for more knowledge about the expected benefits of physical activity for themselves and their families, and information about what will be required of them as a community.

5.5.2 Physical Environment

Playing space

Most participants, especially those with young children, indicated that the lack of facilities and infrastructure prevented children and families from taking part in physical activities. A participant stated that the community does not have a playground, although there is a village school playground that is utilised during school term by school children and after school hours by the males playing sport. Another participant mentioned that females in particular face many challenges in doing physical activity due to a lack of space. The same participant believed that the village needs to have its own playground and indoor space for physical activity for older women. She/he explained that the village has plenty of land to develop their own playground; however, iTaukei villages are divided into clans, which are called *'Matangali'*. Further, she advised that each clan owns their own land and is not willing to give to it the whole village to develop the playground, as the clans believe the land will then be forfeited and no longer be owned by the original landowners. The following comments were typical:

'Yeah, morning walk in the morning. We can go and come back together before they come and prepare breakfast. Or even they can have sports day but there is no playground available, only the school playground because no one wants to provide land and limits.' (Participant 8)

‘Nowadays if we walk down we will see the boys are playing rugby in the big bush due to no ground. The boys put two posts on each side of the bush land and play. The long grass dies out and when it rains, the field gets muddy and boys move to another area to play where there is no mud. If we had multipurpose court, it will benefit everyone in the village and will encourage them to do physical activity and play sports. This works out well.’ (Participant 3)

Female participants voiced their concerns that, for cultural reasons, they needed a playground separate to the males, to retain privacy for females and this would encourage all ages of females to play sport and be physically active. Currently, some females are reluctant to do physical activity due to environmental and cultural barriers. Some participants believed females in the village are committed to domestic duties, such as looking after children and cooking meals for the family. Therefore, there is limited time to do physical activity. One participant explained there is a school playground attached to the village. However, it is utilised by school children from 8.30 am to 3 pm and males take over the playground from 4 pm until the evening. A female participant states:

‘Yes but only in the afternoon after school which is normally used by men to play rugby and we women have to look after the kids and cook the dinner for the family.’ (Participant 1)

‘Maybe their (females) mindset as they don’t enjoy playing or maybe no playground and most important is there is no equipment for them to play with. If we had resources such as multipurpose court, the females will come but they don’t like to go and play in the bush and muddy area.’ (Participant 3)

Another participant elaborated on the issue of lack of space for females to do physical activity by saying he/she felt the access time of the playground was unsuitable for females, but pointed out that the village could choose to develop a playground for females, which would be greatly valued by the community. The following comment was typical:

‘These females don’t want to come themselves. They have to cook meals for the family and look after the family. Only single girls who are in secondary come and play. The married females need to play separately, and there is not enough space in the village for them to play during the daytime. In the afternoon the playground is overcrowded with men and young kids.’ (Participant 2)

5.5.3 Economic Environment

Cost of sports equipment

Participants portrayed the opinion that doing physical activity is challenging, with many barriers, including lack of equipment and the high cost of equipment that the village cannot afford. This was illustrated by the following quote:

‘In the village you know mostly is the financial that is the most problem. So the boys in the community, we have to get money, income to take care of our financial, tuition for the game or … Only the thing happening in the village or we have prepared for the game. Mostly seven aside yeah we have to find our own. Even in the village, little support from the parents but not … only fifty per cent they can support the boys playing rugby and at that time I was being coaching in the top level. I see that most problems in the village are that, less support from the community. I train them, I take them to some of the rugby

competition but you see we are the most weak point for rugby what we need resources' we cannot afford it because of lack of support from the community and financial.' (Participant 3)

Participants articulated that government agencies lack interest in rural areas and that there are no incentives or interventional community programmes related to physical activity or sports. Participants stated that they have not been supported by government agencies to maintain and develop facilities in the village. Further, lack of sports gear is a significant barrier to motivating and encouraging villagers to play sports. One participant conveyed a strong belief that national governments have good, structured sports programmes. However, they are not being decentralised and or infiltrating to the village level. Therefore, metropolitan areas and villages close to the government agency grounds can access the services and enjoy the benefits of the programme, while rural areas cannot. This is highlighted by the following quotes:

'No proper ground, no equipment to help us, we don't have extra income in the village. We always been left out or last one to be getting any assistance from government.' (Participant 12)

'I have my suggestion is you know the government should send a group to come and teach about healthy living and exercise. Mainly for us women they can have a group coming to teach us. Then they can teach us for us group … You know we have to form group for exercise. If they can provide a place where we can exercise, mostly women because you know we don't have places, open grounds like that.' (Participant 13)

‘To have rugby, volleyball gears like that for our ladies like that. We want government people come to our village and guide us, provide some financial assistance to buy and maintain our playground. We in the village not able to afford the equipment for sport’ (Participant 14)

Another participant described how government agencies only provide services to centralised locations. Therefore people in the rural communities can’t reach the centralised locations due to lack of transport and lack of money for bus fares. This is demonstrated by the following quote:

‘We have … last month they’ve got sports kits. They bring it not in tikina. They brought it in just one groups of people in the district of Vunidawa but they called us to go and attend the workshop. I think one week workshop. Kind of sports available, golf, pats, soccer but in here there is no one from the village to attend. Only with myself and Saula. I think I’m the solo thing available. Maybe difficult for boys in this community because of lack of financial support to get to the workshop.’ (Participant 3)

5.5.4 Political Environment

Health system

Helping us

Participants succinctly verbalised having support from their own community and families when it comes to healthy livelihood. For example, one participant made light of the situation by recommending that there are prominent ex-sports players in the village that can be good role models and support the village with healthy living. In response, another participant stated that village role models are not active because they are not given any

incentives from the community or government. This participant's contempt is revealed in the following quote:

'There should be a good advice given to the youths and people of the village. We elders who are retired sportsperson give them good advice to our young generation to keep physically active so that they can play better sports and go out to play national and international sports so that this young youths are able to support their family in the village financially. We mostly tell the youths not to consume alcohol, Kava, do not smoke and eat health food. We have many rugby players retired who are good role models in our village who come to the school ground during training and give advice to the young youths such as village church minister, village health worker and the chief as well.' (Participant 3)

Some participants stated there are no physical activity programs run either by the health sector or by other government agencies. Another participant illustrated frustration with the current health system due to lack of engagement and consultation at the local community level. She/he bluntly said that even though there are iTaukei health care workers available at the community health centre, they do not meet community needs and do not understand village cultural needs, as it varies from district to district. During the feedback process, the pastor of the village made a general comment stating that the health sector needed to modify the health promotion programmes so that they were culturally appropriate to the specific village. He also reputedly encouraged local health workers to engage with rural communities rather than complete required paperwork.

One participant explained that the environment needs to be developed in the community before any health promotion interventional programmes are attempted. She/he said that encouraging health promotion activities is not effective or realistic behaviour. For example, health workers encouraging people to walk for 30 minutes daily may be irrelevant to villagers with poorly maintained foot pathways, insufficient lighting, limited facilities, and no sports gear. Some older participants raised concerns about health workers not being actively involved in providing culturally appropriate health literacy to older adults in the community, which means they cannot understand the needs of those who have multiple medical conditions which restrict them from doing physical activity.

Being aware

Some participants expressed concerns that there is a lack of physical education and awareness from local health providers at the community level. The literacy level of the community is low as most villagers have not completed secondary school. The participants stated that people in the village always ask what physical activity they need to do for their wellbeing. Some participants indicated that they do their normal domestic duties on a daily basis and that they consider this as physical activity. Male participants stated that they go to the farm and do lots of intensive farm labour, and this is another means of physical activity. Participants' understanding of physical activity varied, with some stating it meant normal duties, while others defined it as hard labour. Some participants also mentioned that they get information on physical activity via audio and video media. However, some stated they lack the time to participate, or the programmes are at odd hours, and this

limits them to listening rather than participating. Regardless of the time, most people in the village are not able to afford a TV. The following comment was typical:

‘Not working because it only reaches some, some with a television, some with the radio. It does not reach them unless they bring it to village meetings. It is only reaching people who are exposed to this media. Those who have no access to those kind of media, they are left in the dark.’ (Participant 8)

Participants firmly voiced concerns related to lack of support and information on women’s health from the health care providers in the community. Participants believed local health providers should come to the community, provide educational resources, and conduct physical activity awareness programmes that are culturally acceptable to the local villagers.

Participants described experiences with health professionals as beneficial regarding the advice and care that is given when they go the local hospital. However, they also felt challenged in terms of understanding both the health professionals and the relevance of what is said. As a result, they sought the wisdom of people who had experience with life, such as a patient with a non-communicable disease. Participants revealed that follow-up information was minimal in the community. Another participant spoke about his/her strong desire for health awareness support from a local health professional in the community and for a place to gather and learn. Also, she/he explained there was a need for traditional ceremonies to be a part of physical education programs. All of the participants believed there should be a multisector approach to meet the needs of the village. The following comments were typical:

‘We need some adviser for the ministry, for the sports. We need some more workshops to clear things. We don’t know most of it, they really hoping the communities know everything but that is not correct. The health department, the youth and sports. They have to come and do some workshop training for the community.’ (Participant 4)

‘I want to talanoa with people in the village because I’m the Turaga Ni Koro (village spokesperson). I want to tell the village people about eating healthy food and plant more green vegetables. I want to talk my wife about cooking healthy food as she cooks food for me. I also want to boys when we go to the playground about healthy eating and exercising. There is lack of interest from our health department to come to our village and give advice to our people in our monthly village meeting. I don’t know what to do.’ (Participant 2)

5.6 CONCLUSION

This chapter analysed data collected and discussed the results of the two main emergent themes, followed by six subthemes for each theme, as they relate to rural iTaukei villagers’ perceptions of culture and obesity.

The findings of this research conclude that socio-cultural values and beliefs play a vital role in the iTaukei community and lead to an increase of obesity in the villagers. Gender also plays a significant role in the rural areas of the iTaukei community. The findings also conclude that the primary need of iTaukei is survival in the environment in which they find themselves. This principal factor has an impact on the built environment, the use of space, food, staple diet, meal preparation, gender roles, clothing, and technology. Clearly, the culture of iTaukei who live in rural environments is entirely

different from that of Fijians who are urban dwellers, not just in how they react but also in how they think about and interact with their world.

The next chapter provides a discussion based on the analysis of the results, reflecting the literature on health matters relevant to the iTaukei village, as well as contradictions between the literature and the results of this research. A summary is provided to help the reader identify the significant issues of difference between the results and the literature. Finally, the findings will be discussed as they relate to the research questions.

Chapter 6: Discussion

6.1 INTRODUCTION

Key research gaps, as identified earlier in the literature, are discussed in this final section of the thesis. Moreover, the gained knowledge and insights from the literature, which help explain the findings, have also been highlighted. These findings add to current knowledge on the topic and aid in promoting healthy lifestyles in the studied rural iTaukei communities. To remind the reader, this research was not a 'walk in and walk out' physical activity that occurred during the application of CBPR principles; rather, this research was based on a long-term relationship built on trust. Further collective research will benefit the community and the nation as a whole.

The research set out to distinguish and analyse socio-cultural factors that may cause obesity, to understand the effects of nutrition and physical activity, and to identify obesity prevention interventions in the rural iTaukei communities of Fiji. This is the first research conducted in Fiji that explores iTaukei perceptions and experiences to gain a more comprehensive understanding of the influences of the environment on the nutrition and physical activity behaviours of rural iTaukei communities. This applied research is a significant component in the development of a culturally appropriate intervention to address obesity in this complex community.

6.2 SCHEMA OF DISCUSSION

The research objective was to understand the socio-cultural context to address obesity in a rural iTaukei community using CBPR. Using the

principles of CBPR, I was able to involve the community members' personal knowledge and experience to dissect the broad array of environmental factors influencing adult obesity in iTaukei communities, to form a community-specific action plan focused on healthy eating and physical activity for the communities, and to design sustainable health programs.

The CBPR process and principles privileged iTaukei local knowledge and allowed local stakeholders to define meaningful ways to achieve positive health outcomes for iTaukei rural communities. Reconnecting health with iTaukei culture was embedded in many priority actions, emphasising the perceived value among community members of traditional knowledge and practices for community wellbeing. The findings were derived from interviews based on the ANGELO framework. The ANGELO framework tool was effective as a method for classifying the themes that emerged, but for the findings to be meaningful for the research population, the principles and process of CBPR guided the discussion.

6.3 EXPLORING MICRO- AND MACRO-ENVIRONMENT DIMENSIONS OF OBESITY

The World Health Organization (WHO) agrees there is evidence that culturally appropriate health promotion and preventive health interventions are productive in improving health and wellness, decreasing the burden of lifestyle diseases, addressing health inequities, enabling the better use of resources, and increasing economic efficiency (World Health Organization, 2008). The centrality of culture and wellbeing in the health of iTaukei people does not only involve the physical wellbeing of an individual, but it also involves the emotional, social, and cultural wellbeing of the entire community

to ensure that every person can accomplish their full capabilities as individuals, and in that way bring about the wellbeing of their entire community. This is a holistic approach and consists of a cyclical loop of life–death–life (Gwynn et al., 2015).

During the dialogues and community consultation process, participants identified several obesogenic factors in the physical environment, such as limited space for physical activity, no access to a playground, and a lack of culturally appropriate programmes. These factors interconnected with other factors categorised under socio-cultural, economic, and political environment types by micro- and macro-environmental dimensions. Across micro-environmental dimensions, various communities coordinate with each other to obtain food, engage in physical activities, or both. This translates into geographic boundaries having groups of people sharing similar health needs or influencing one another in some way. On otherside macro-environment dimension, obesity is a category of industries, facilities, and supportive infrastructure that affects nutrition and physical activity within the community setting. This includes the production of foods and decisions made by policy makers to influence the community. Micro-environment dimensions are significantly outside the effect of the community. These dimensions are discussed below.

6.4 MICRO-ENVIRONMENTAL DIMENSIONS

6.4.1 Community Nutrition Environment

Despite being the largest consumer and a self-sufficient producer of local vegetables, Fiji is still dependent on its imports of food products such as flour, sugar, meat, and potatoes. Thow and Snowdon (2010) estimate that

about 62% of the islands' food consumption requirements is derived from importation, and this has shaped the eating habits and patterns of its people, the 'iTaukei', resulting in major food acculturations over time. In spite of this, there exists a limited focus in Fiji on factors influencing the broader nutritional environment in the rural and urban areas. Several short-lived, uncoordinated measures have been undertaken to prevent the proliferation of fast-food establishments or illegally prepared fatty foods sold in the village, establishments that are often frequented by local consumers during meal times. There has also been a dearth of local grocery stores offering fresh fruits and vegetables produced by the village, as communities have been attracted by competitive prices and the variety of products being offered by larger city outlets or by the small stores that have an illegal presence in the village. Regardless of this, most villagers prefer to grow the fruit and vegetables that are quite popular among local households, thus enhancing their ability to access fresh, local produce.

A recent observation in the micro-environmental situation is the generation of income through selling local produce in city markets, which grants opportunities for iTaukei villagers to make a sustained livelihood. With the income so generated, these villagers have been inclined to purchase processed foodstuffs. However, consuming this processed food has increased their chances of gaining weight and becoming obese. In numerous village households, the purchase and consumption of processed food means there is no need to prepare cooked meals. As practically witnessed, there has been a rampant increase in the purchase of cheap confectionaries such as cheesecakes, pastries, and sausage rolls by the villagers through illegal

stores. Being high in calorie content and rich in fatty minerals, these products, along with the recently popularised sugary ice-blocks and fizzy drinks, have become highly popular consumption items in iTaukei villages, despite having a health impact. This increase in the consumption of fatty foodstuffs can be attributed to the recent availability of electricity across the districts. With the advent of television in these villages, combined with the rapid proliferation of illegal fast-food outlets, there has been an increase in the marketing of unhealthy processed foods for the villagers and this has convinced the local, less-educated iTaukei adults to purchase junk food without giving any consideration to the effects on their health.

6.4.2 Economic, Social, and Literacy Environment Status

Obesity in iTaukei villages is also linked with the economic and social status of the villagers, combined with their general literacy levels. According to the village's health survey, an inverse relationship was reported between self-awareness about obesity in the community and family affluence. Furthermore, the link between education level and obesity has also been inversely proportional to each other, as per the results of this survey.

Various economic issues such as the global financial depression and more general financial constraints have an impact on the food choices of the entire family. Also, any economic insecurity affects a high number of iTaukei families who either have limited funds or are self-employed.

6.4.3 Home Nutritional Environment

In addition to the influences of their families, there has been a significant degree of variability in and influence from both individualistic and environmental factors on the eating patterns and physical activities of iTaukei

communities. The prevalence of obesity and overweight tendencies among old-aged iTaukei family members provides a negative influence on their youth who carry a high degree of perceived risk due to hereditary susceptibility. This is particularly so in marginalised family structures, where parenting plays a vital role in the upbringing of children and in promoting healthy eating abilities, irrespective of socioeconomic status. This is an important consideration for obese adults and an overweight population. Little is known about consumption within the iTaukei household; however, it has been suggested that snacks are eaten in addition to, rather than displacing, set meals, resulting in high frequency of food consumption among this group.

This study found limited information on policies or interventions that might influence the physical activity levels of adults in iTaukei communities and at home; rather, the majority of studies and policies identified in the literature focused on the food environment.

6.4.4 Physical Activity in the Community

A lack of facilities for sport and physical activity, such as reasonably maintained open spaces, and a lack of equipment such as poles, hoops, and nets, restricted regular physical activities in these communities, with individuals and teams competing for the availability of limited sports facilities. Similarly, the unsustainability of village-based sport and physical activity programmes was raised as an issue that required immediate rectification to promote physical health among these individuals. Local sports and competitions tend to be more available for male and female youths than for married women, resulting in disproportionate rates of sports participation between varying age and gender-based groups. While it was reported that

there is enthusiasm among women for sporting activities and gaming opportunities, there are limited offerings for older women. A lack of women leaders and administrators in sporting activities and programs, particularly at the local club level, was raised as one of the major reasons affecting their participation. Similarly, limited channels for healthy sports activities for old-aged men, above 55 years of age in particular, was found to restrict their participation in regular physical activities. This was a very troublesome situation for men who had been active sports persons in their youth but who had to forgo activity as there were no longer sporting opportunities available.

Certain iTaukei norms and common village attitudes put restrictions on women's participation in sport and other physical activities as it is believed these programs divert her attention from home chores and family responsibilities. The participants described the role of women in iTaukei society, particularly married and older women, as having a strong focus on family and home responsibilities, resulting in limited participation in sports and other physical activities. Similarly, a few participants considered that wearing flesh–exposing sports costumes (such as short skirts, sleeveless tops, and tight uniforms) also restricted women's participation in sporting events.

6.5 MACRO-ENVIRONMENT DIMENSIONS

6.5.1 The Nutrition Transition

A significant increase in daily energy intake among iTaukei villagers was observed in the 1980s after the military coup in Fiji. The resulting financial pressures from this military coup meant that rural iTaukei communities resorted to more processed and fatty foodstuff than fresh local

produce. These historical influences caused systematic changes to global food production and distribution systems, ultimately improved economic conditions, increased dependence on foreign imports, and have resulted in a shift from the traditional staple diet to a more ‘Westernised’ diet high in refined carbohydrates, meat, soft drinks, and salt, as discussed earlier in the Literature Review chapter. Thus the World Health Organization (2010d) portrayed the iTaukei diet as an unhealthy one; rich in fats and sugar and low in fibre, designating the community as a high-risk group for NCDs.

Nutritional transition has had an impact on eating patterns pertaining to globalisation, and change in lifestyle and the influence of food import policy in Fiji have adversely affected health (Snowdon & Thow, 2013), particularly of rural iTaukei communities. Crammond and Carey (2016) stated that in the nineteenth century colonisation by Great Britain and Indian indentured labourers from India brought a variety of food, which was the beginning of changes to the iTaukei staple diet. The major nutritional transitions that had adverse effects on health were the shift from the iTaukei staple diet of starchy root crops and fruits to the increased consumption of processed foods (Thow et al., 2011, p. 21).

In addition, Lako (2007) mentioned five factors that pertained to nutritional transition in Fiji. Ethnic pluralism is the initial factor, which is due to the increase in multicultural communities, influencing not only the intake of iTaukei staple food but also the eating patterns. Second, the overemphasis on cash crop produce, which changes the way people do subsistence farming in the villages and therefore affects food as iTaukei staple crops are shifted towards inferior infertile land. Third, Westernised lifestyle changes

increase dependency upon imported processed food, which increases demand for cash employment; therefore, instead of planting, purchasing food has become the alternative and preferred choice that consequently affects health. Fourth, a shift in prestigious food values: the perception in younger generations is ‘imported foods are only accessible to rich people, those who have money’. Finally, the global nutrition industry, the change in agricultural policy, which means a shift from subsistence farming to more export-driven policy has increased the demand and significantly reduced the local supply of iTaukei staple nutrition (Crammond & Carey, 2016; Snowdon & Thow, 2013; Swinburn, Sacks, et al., 2011)

An increase in the variety of available foods, all-year-round availability of food items that were previously only available during the local growing seasons, and increased accessibility of energy-dense food products in a cultural environment where food occupies a central role, resulted in predictable, significant changes for the community. The results from a village health survey indicated that overall vegetable and fruit intake is high among iTaukei communities, while intake of corned beef, bread, soft drinks, and meat is also substantial.

Governmental efforts to exert control over supply and availability of unhealthy food products have been mostly rendered ineffective by trade agreements, common markets, and transnational marketing of food products and food chains. However, the feasibility of fiscal incentives to encourage healthy nutrition, to increase the availability of healthy food outlets, and to restrict outlet-based sales of fast foods is currently under analysis by the Government of Fiji. Fiji is also a signatory to the *WHO Charter on*

Counteracting Obesity, which emphasises the importance of subsidies, reformulation, and marketing restrictions.

6.5.2 Socio-cultural Characteristics

Rural iTaukei communities underwent a sudden shift from local iTaukei staple food shortages, particularly during the days when meat and foods rich in fats and sugar were practically unobtainable by the poor; at the same time, the cultural identity shifted to a more Westernised form. Large numbers of village workers drifted from rural to urban cities for work commitments and returned decades later with Western food preferences established during their stay. There is a loss of pride in being self-sufficient in supplying staple diets.

In addition, for many years Fiji was greatly dependent on foreign monetary and commodity aid, including imported foods. This had affected the type and quality of food available at the time and encouraged unhealthy dietary practices. The villagers consumed large amounts of cheddar cheese, sugar, corned beef, tinned fish, and condensed milk, previously unusual in the rural communities. Although a producer of sugar, Fiji's consumption and supply of sugar is the highest in the Pacific, indicating that sugar is probably a major source of energy intake for iTaukei communities (Thow & Snowdon, 2010).

In spite of increasing awareness of what constitutes a healthy diet (in an urban region), such a 'socially learned' attitude towards Westernised foods may have perpetuated from one generation to the next, thus becoming the norm today. Additionally, the iTaukei communities embrace some obesogenic cultural norms, such as a marked preference for large meal

portion sizes and frequent engagement in religious, public, or family-oriented feasts and celebrations that are traditionally characterised by an abundance of food. The village's '*Sogo*' (feasts) are distinctive cultural traditions that have been commercialised by the food industry across many iTaukei villages as foreign fast foods such as coconut milk, corn beef, ice-cream, processed meat, chips, bread, fried pastry, and other foods rich in saturated fats and sugars have been made readily available.

Subsequently, the iTaukei main meal is dinner, where families gather together to have full meal of either meat or local mussels and green vegetables, finished off with a cup of tea. Tea intake is more than by the British who introduced it to the iTaukei. Traditionally, lemon leaves were used to make tea and consumed; however, with the acessibility of processed food in the local shops, consumption of lemon leaf tea is not as popular or it is blended with tea leaves. Eating habits in the iTaukei community have a direct impact on health outcomes; that has been discussed in the iTaukei literature about socio-cultural change in eating behaviour (Meo-Sewabu, 2015; Nabobo-Baba, 2006; Snowdon, et al., 2010; Swinburn, et al., 2007)

6.5.3 Physical Activity

The provision of opportunities for physical activities and sports sketch a discriminated picture for iTaukei, where the rural communities appear to be highly disadvantaged by local government incentives, whereas in urban districts, local councils have created recreational parks and footpaths for individuals to engage in physical activity. The condition of the roads at present and a lack of space in the villages remain major issues in curbing a sedentary lifestyle. The adult population is characterised as being physically

inactive due to lack of space in the village for walking, playing sports, and engaging in healthy outdoor activities. Additionally, the Fiji climate is characterised by hot, dry summers and mild, rainy winters. Temperatures in summer can exceed 35 °C, and high levels of humidity often make the outdoors uncomfortable. High temperatures are associated with reduced physical activity; hence, the climate of the region can also contribute to low levels of physical activity observed.

The villagers are more inclined to use bus and private van services to mobilise in the district since there are no proper footpaths or gravel roads, which create safety concerns for individuals. Also, there are no rural development physical activity programmes funded by the government, which contributes to a lack of knowledge about physical activity with no possible remedy in sight. Currently, levels of both walking and cycling in the village are low. This has been attributed to a range of factors including hilly topography and subtropical climate, poor road conditions coupled with a lack of cycling infrastructure, dust pollution, and high levels of perceived road danger.

Poor rural iTaukei people depend on agriculture for their food and income; however, agricultural growing conditions are often unfavourable, resulting in low productivity. These villagers struggle to meet food requirements, especially when their households are large. Most continue to use traditional farming methods due to limited knowledge about the new technologies and skills that would improve yields. They also have few growing choices, and their landholdings tend to be too small for cultivation or production of other crops. Remote rural communities are also geographically

isolated. During the rainy seasons, as many as half of the village become inaccessible. Social isolation is another particular problem for upland iTaukei people, who are marginalised in many ways because of their traditional culture, customs, and religious beliefs. Also, rural communities have very limited access to government and financial services, roads, markets, basic education, and health services.

Together and separately, rank and status influence iTaukei community expected and actual patterns of eating. While rank is fixed at birth, status is context-dependent and determined by a number of intersecting variables in the community, including seniority, gender, kinship and the order of birth, as well as individual achievements.

The rural communities face many challenges to improving livelihoods; these include geographical isolation from the rest of the world and lower levels of education, partly because there is a limited range of professions in the local area and/or limited access to resources and tertiary education. Household incomes in rural villages are lower than in urban areas, though the cost of living is similar.

6.6 DELIVERING APPROPRIATE CULTURALLY SAFE HEALTH PROMOTION PROGRAMMES

The author identified several gaps through this research, such as declining attempts to promote tailored health-related initiatives, clinical ineffectiveness, lack of accessible and culturally competent health education, and absence of integration into the system of health promotion, where needs are complex, to prevent obesity and other diseases in iTaukei communities. These are further discussed as follows.

A failure to apply culturally suitable research approaches towards health promotion activities in the rural iTaukei community has been identified as a potential issue. Consequently, there is a significant need to reflect upon the practices, beliefs, and attitudes of these individuals through communication mediums while responding towards changing these beliefs for their greater wellbeing.

Lack of appropriate knowledge about obesity in this community results in socio-cultural practices that confirm iTaukei people ignorance about contracting diseases and disorders. Current interventional approaches are deemed inadequate when dealing with disadvantaged populations such as the iTaukei community (Batterham, Hawkins, Collins, Buchbinder, & Osborne, 2016). International literature and academic researchers have also validated the need for health promotion activities to recognise the socio-cultural context of a victimised community, while addressing issues such as racial and ethnic inequalities in the health sector (Okechukwu, Davison, & Emmons, 2014). Research studies in Indigenous rural health require the adaptation of new and innovative methods for health promotion and provision, demanding the related authorities deliver health literacy in the iTaukei community by reducing existent disparities and ignorance (McMurray & Clendon, 2015).

The other identified gap is the difficulty in establishing culturally appropriate research processes, or applying community-based participatory research (CBPR) processes, in designing health promotion activities for both rural iTaukei communities, while also addressing the socio-cultural aspect of their lifestyles. Consequently, there is a need to clarify the research process

and employment of CBPR practices in designing and delivering health literacy and health-promoting initiatives. Health promotion literature suggests an increased focus on the characteristics of racial and ethnic communities so as to overcome the existence and persistence of health-related disparities (Baker, et al., 2005). Swinburn, Millar, et al. (2011) argue that the success of socio-cultural understanding of obesity in the Pacific community depends on the environmental speculation of economic, political, socio-cultural, and physical practices of these people, including a closer examination of their attitudes, norms, and beliefs.

In the Literature Review section of this thesis, two specific health promotion programmes in Fiji were discussed; these were the OPIC project and the Kadavu Rural Health project. Complete information about the consultation process was not available for either of these projects. The OPIC project consultation process proceeded with two ethnic groups in the suburban communities, while the Kadavu Rural Health project adopted a community development approach based on a culturally relevant design. Therefore, the use of a previous CBPR process to identify socio-cultural context could not be examined. For the OPIC project, a baseline prevalence survey and focus group discussion helped in elaborating obesity-related factors for promoting health initiatives among school-going youngsters. The questionnaire acquired respondent demographic information, and there was limited information regarding the physical activity and diet of the rural iTaukei population. A comparison between quantitative and focus group designs showed how qualitative designs did not account for socio-cultural explanations regarding different attitudes, beliefs, and communal values in

the studied community, while focus group discussions presented an individualistic view rather than a view of collective opinions.

Kadavu Rural Health project adopted a participatory research approach to design community learning-based stages; unfortunately, only one published paper has details about the approach. This hindered an exact understanding about the involvement of the community and even the examination of the process did not appear to be holistic. In the Literature Review section of the sole paper, several limitations were outlined regarding the restricted reach of prevention campaigns to Indigenous populations including community-based consultation. These limitations also included the failure to respond promptly to community needs, which in turn is culturally mismatched in the sense that the research was focused on available funding and less focused on a genuine willingness to resolve a community's obesity issues. Furthermore, it required further programmes for health promotion to be applicable in different settings (Castro, Barrera, & Martinez, 2004).

Castro, et al. (2004) suggested the formulation and implementation of culturally applicable designs so as to provide health promotion activities in local Indigenous communities based on their own experiences, values, norms, and needs. This would, however, require the use of community consultation as a practical approach rather than relying on the survey data.

Effective community engagement health promotion projects, as discussed earlier in this work, are not a simplistic approach; this is so because many academic researchers, in their quest for discussions on health interventions, do not identify the theoretical basis of ethnicities and racial groupings (Brennan, et al., 2008). According to other studies, effective

community development projects involve socio-cultural factors that ensure long-term behavioural effects (Allen, Kilvington, & Horn, 2002; Anderson et al., 2003; Gupta, Parkhurst, Ogden, Aggleton, & Mahal, 2008). Further, an expert panel of the WHO established that health promotion interventions targeting rural communities should pay particular attention to socio-cultural factors and the environment when dealing with vulnerable populations (Parkes, et al., 2009). The literature review also validated the truthfulness of this for Fiji. Although the Kadavu Rural Health project applied a participatory approach (community input was sought), community feedback was not provided, nor was community empowerment enacted to fully employ the approach and implement it (Roberts, 1997). With the OPIC project, it was impossible to ascertain the extent to which health behaviour interventions could be applied (Swinburn, Millar, et al., 2011). Similar limitations were identified in the usefulness of a communal, participatory approach and lack of consultation. These also included failure to understand socio-cultural factors, modification of content rather than tailored content, lack of formative research, absence or lack of narrative, and lack of awareness in the iTaukei community.

The following conclusions were drawn from the discussion:

There remains a gap in understanding and evaluating remote and rural iTaukei communities' knowledge of obesity, and how they perceive socio-cultural factors that, in turn, give meaning to their disease conditions, underlying unhealthy lifestyles, and obesity. My research will be fruitful in helping the community resolve this problem, as well as in the design of culturally relevant practices to overcome obesity.

Also, the approach will be useful to underpin future projects targeted at specific cultural characteristics. This is especially important in developing any new participatory health promotion activity, to help bring positive changes to the lifestyles of iTaukei people and to help them explore their own values.

Based on the research findings, I noted a dearth of research for rural iTaukei communities, even though non-government organisations (NGOs) acquired external funding for community development projects in the agriculture industry, which could have brought access to roadways and transport for the citizens' convenience. However, despite these projects being well funded, the health perspective of the iTaukei people remained largely ignored.

The findings showed that rural iTaukei communities had poor participatory rates in sports, serious income inequalities, poor health literacy, gender inequality, a shortage of health-based human resources in various ministerial departments, and a lack of interest in tailoring health programs in a socially acceptable manner, an issue that remains overlooked since the British colonisation era.

None of the health promotion activities in rural areas to date employed CBPR for the prevention of obesity or other related symptoms. This research, therefore, also identified another gap in the research, which is related to a concerted use of the CPBR approach in understanding socio-cultural factors to improve livelihood, empowerment, decision-making and sustainability of community-based developmental projects that result in greater outcomes for social change.

This research argues for the use of CBPR implementation to greater understand the socio-cultural factors that increase the risk of obesity, particularly within the rural iTaukei communities. Health care providers need to build capacity for rural populations to establish culturally tailored obesity prevention and awareness programs. The advantages of such programmes to the health care providers include benefits to the Indigenous communities, which would be enduring and sustainable. This doctoral work has described how following CBPR principles enables a project to reflect cultural values and behavioural preferences, in this case of the iTaukei communities. This value is supported by several examples from international literature.

The research objective was to discover whether social network and community-based participatory research (CBPR), employed in combination with proven health promotion principles and adapted according to the socio-cultural factors, could be used to create an appropriate culturally tailored obesity prevention programme for rural adult iTaukei communities who are at risk for NCDs. The research focused on the process of greater community development for the Indigenous population to promote their health and wellbeing while influencing their lifestyles and behaviours through positive reinforcement.

The following research questions were addressed in my research:

1. Which socio-cultural constructions of health are relevant to obesity from the perspectives of a rural community in Fiji?
2. What are the strategies for enhancing the capacity for obesity prevention and action in rural areas of Fiji?

6.7 ITAUKEI PERCEPTION AND KNOWLEDGE OF OBESITY

My research findings were consistent with existing statistical data showing low levels of knowledge and awareness about obesity in the iTaukei community (Christoforou et al., 2015; Gyaneshwar, et al., 2016; Lin et al., 2015; Low, Lee, & Samy, 2014). The mixed-methods design of this doctoral study added to existing knowledge while discovering the grounds for more information. In doing so, the research contributed to the small body of international and Pacific literature on the perceptions and knowledge about the prevalence and prevention of obesity within iTaukei communities and the social and cultural meaning given to the conditions (Swinburn, Millar, et al., 2011). This additional knowledge is essential in designing policies and programmes to prevent obesity and increase the community's knowledge about healthy lifestyles. By engaging in informant interviews as the primary research design, I was able to collect rich data about the obesogenic environment, such as economic, physical, policy/political, and socio-cultural, as well as communal beliefs, norms, values, and behaviours. According to the responses obtained, complex and often intriguing reasons were cited for the high prevalence rates of obesity in the iTaukei community and the subsequent overall adverse health conditions.

Three related examples from the research data highlighted the importance of considering socio-cultural factors while understanding and describing the design of appropriate health promotion interventions for overcoming obesity. As stated in the words of one of the respondents:

'We think in terms of big is good. Therefore large amount of foods on the dinner table. Therefore, it is shifting that thinking of the village feast. There is

that cultural side that we do not want someone to leave the village feast and say oh well they did not feed me well (Participant 3).'

This statement emphasises that cultural norms, values, and beliefs have a significant influence on the diet and weight-related behaviours among remote and rural iTaukei communities. As declared by previous studies, larger body images and the biomedical understandings of obesity, carry different meanings for Pacific Islanders altogether (Petersen, 2007). In the situation under study in this thesis, a culturally acceptable perspective regarding the larger amounts and varieties of food at different village feasts has been declared as the main reason why iTaukei communities are unable to lead active and healthy lives.

According to the arguments put forward in the literature review of this research, one of the restrictions of epidemiological research lies in its lack of acknowledgement of the impact that globalisation, or urbanisation, and British colonial practices have had on iTaukei health in totality. However, one of the comments obtained during the respondents' participation in interviews threw light on the importance of recognising and understanding that for some iTaukei people, obesity is inseparable from a colonised history that continues to shape and influence their cultural observations and family practices:

'See we don't go fishing anymore. We can't just go to the river and go in the bush creek and get it because we don't know what's healthy and unhealthy anymore.'

Conversations in various meetings of the village demonstrated the outcome of health disparities – death – is not as significant to these people as it is for Western or urban cultures. In this sense, community members

primarily perceived good health is a shared responsibility, something that is existent in their extended family lifestyles as an incentive.

Western and urban communities highlight individual lifestyle choices as a central determinant of good health and wellbeing (Kyoung June, Landais, Kolahdooz, & Sharma, 2015). Some participants, perhaps not remarkably, were of the opinion that a biomedical discourse of personal responsibility is necessary for understanding the threats posed by obesity and resolving related health issues. Younger village members were more likely to attribute the spread of obesity to their diet and physical activity habits. Nonetheless, this only indicates a limited view of their actual experience and story. The participants presented a rather intriguing, yet complex, narrative about their experiences of obesity that was drawn upon the wider political, economic, socio-cultural, and physical environmental contexts. Failing to engage with this narrative and recognising the complexities of iTaukei engagement within the health system, in general, explains the current dearth of ineffective health promotion services that are neither in the interests of the patient, the family, nor the wider rural community.

The findings of this research presented holistic implications for the iTaukei community in their quest to overcome the prevalence of obesity. Two examples that are drawn from the research further illustrate this point. Firstly, there is a common misconception among iTaukei communities that obesity is a normal occurrence, without realising that it can become a cause of many other NCDs with potentially fatal outcomes. A strong sense of fatalism contributed to feelings of intermittent denial and grief among the respondents. One of the main contributions of this research to the iTaukei

community is the verbalisation of this delusion, creating the first step of awareness among the people.

Secondly, poor communication, lack of health literacy, disengagement, lack of support, challenges of geographical isolation, lack of follow-up visits, and cultural insensitivity characterise the ineffectiveness of the government in trying to curb the obesity issue. This finding was indeed significant as it provided qualitative evidence of the need to incorporate governmental agencies for health promotion within the studied communities. World Health Organization (2011a) report revealed that the number of health professionals employed was 5% fewer than recommended, due to budgetary constraints. Moreover, the Fiji National University trained only the number of employees that was necessary to fill the positions as mandated and approved by the Ministry of Health. According to the arguments presented in the literature review within this doctoral thesis, there is marked underrepresentation of Indigenous health incentives to overcome inequities in the communal health sector (Curtis, Wikaire, Stokes, & Reid, 2012).

Finally, the research findings recommend the development of activities and initiatives for health promotion to address the holistic nature of lifestyles in Fiji, while recommending the avoidance of future research that limits the focus to an illness or a specific health vulnerability. The church pastor of the village suggested the following during the communal feedback obtained:

‘We iTaukei being healthy are not just medical. If you are in the village, we look at this as spiritual. It’s about families. It is everything we doing in our lives, and we want our families on board to be healthy. We need them to be

involved and to walk that walk with us. Families required making the important changes. That is for us to be healthy.'

6.8 CONDUCTING CULTURALLY APPROPRIATE RESEARCH WITH ITAUKEI

This doctoral research supports the work of those who have found that CBPR is a preferred approach for working with Indigenous communities when designing, planning, and implementing health promotion initiatives (Barbee et al., 2010; Israel, et al., 2011; Wallerstein, et al., 2008). Globally, CBPR has been demonstrated as a viable research approach for working with diverse communities because it builds on local knowledge and culture, emphasises co-learning and decision-making, and prioritises local strengths and resources. The results of this research are highly consistent with these observations since they validate the appropriateness of CBPR as an approach when discussing an issue at the community level – in this case the increasing rates of obesity, and the need for robust interventions – while ensuring that local knowledge is valued, cultural relevance are prioritised, and goals are agreed upon as a community. For example, the village focused on keeping everyone healthy and making changes for the betterment of their families rather than being influenced by the key informants, participants, or the members of a research team. These findings supported the work of Wallerstein, et al. (2008), who recognised CBPR approaches as helpful in identifying social factors, such as the support received in families that can prove to be culturally beneficial while influencing the health outcomes in a positive way. Valuing communal expertise and knowledge means prioritising their input in understanding key practices. For example, in selecting obesity prevention as an objective for physical activity, additional outcomes could be

focused on. The Ministry of Health (2014) recommended thirty minutes of moderate-intensity physical activity at least five days a week; however, the community members argued that that was unrealistic as there are no public playgrounds in the village that would allow them all to spend this much time exercising or playing physical games. As a result, to help prevent obesity, playgrounds and sports clubs need to be provided throughout the village.

6.9 COMMUNITY HEALTH LITERACY

The research results and the CBPR approach directly informed the ideas conveyed in this work and certified the importance of culturally appropriate health literacy programmes. As a result, the researcher believes the approach could also prove useful for future researchers to develop health promotion programmes that specifically address cultural appropriateness as the main component.

The research development process supported literature on health literacy that focused on the unique characteristics of a racial and ethnic group, examining the prevalence and intensity of various health disparities across rural iTaukei communities (Israel, et al., 2011; Wallerstein, et al., 2008). In the introductory chapter, for example, the research works of Kreuter and his colleagues helped in identifying five main categories in which health promotion practitioners can employ physical activity and cultural sensitivity as essential aspects of these initiatives, to make them easily attainable for everyone in the studied community (Kreuter, et al., 2003). The CBPR approach demonstrated in this research strengthened the importance of both community involvement and socio-cultural strategies where ‘cultural values, beliefs and behaviours are identified, reinforced, and built upon to provide

context and meaning to health promotion activities and health literacy about a given health problem or behaviour' (Kreuter, et al., 2003). The CBPR approach produced a culturally relevant design going beyond the 'surface structure' of simply attending to appropriate imagery, to a 'deep structure' that conveys salience (Kreuter, et al., 2003; Minkler & Wallerstein, 2010; Wallerstein & Duran, 2006).

This research explicitly presented the efficacy of the process of working in consultation with rural villagers to understand the socio-cultural factors contributing to obesity, and enable the researcher to study beliefs and practices. By detailing the research design, particularly the collaborative process within the iTaukei community, and the development of specific health promotion intervention strategies, this study addressed the gaps in existing research. None of the major Fijian tertiary institutions have published information detailing an understanding of the socio-cultural factors or how redesigning of the culturally tailored health promotion interventions could enable the achievement of positive health outcomes for iTaukei communities.

This doctoral study also clearly identified the CBPR approach as conducive to understanding the socio-cultural context of obesity and health literacy in the establishment of obesity prevention interventions. None of the previous Fijian studies provided information explaining the CBPR approach for the rural communities, nor did they discuss or evaluate the reasons behind its employment in examining the issue. One of the strengths of this doctoral research was its demonstration of a socio-cultural context as a good fit for health prevention activities with iTaukei people. Although there are many approaches available, in the past CBPR approaches have been

criticised for not involving the ethnic community groups in planning health promotion interventions (Teufel-Shone, Siyuja, Watahomigie, & Irwin, 2006), wrongly assuming that ethnic groups under study have limited knowledge about their own community. These presumptions, made by individuals, limit their understanding of the complexities of the socio-cultural contexts, disrespect the community role, and in a systemic fashion, refuse to acknowledge the complexity of social systems and relationships within an indigenous community (Teufel-Shone, et al., 2006).

Teufel-Shone, et al. (2006) argued that the problem does not rest with the CBPR approach per se, but rather, its application and that it can be adapted quite successfully for use in different ethnic populations (Bamber, Owens, Schonfeld, Ghate, & Fullerton, 2010; Minkler, 2010; Teufel-Shone, et al., 2006; Tindana, et al., 2007; Wallerstein & Duran, 2006). As Teufel-Shone, et al. (2006) emphatically stated, researchers give close consideration to the structure and surfacing determinants of behaviours, to successfully translate them into culturally sensitive messages for behaviour change. This argument further reinforced the usefulness of the CBPR approach that was utilised in this research. As Teufel-Shone, et al. (2006) explained, successful adaptation is understanding and acknowledging the socio-cultural factors as the main requirement of the CBPR process. Researchers should, therefore, conduct their research taking a co-learning stance, rather than a deficit approach, and also recognise and acknowledge that the community has its own strengths, viewpoints, customs, wisdom, and capability that can be utilised in initiating behavioural change.

Israel, et al. (2010) stated that an approach should encompass thoughts not only about individuals but also about community-based determinants of health (formative assessment). This study supported Israel, et al. (2010), who cautioned that a CBPR approach must pay attention to deep structural determinants of behaviour, and must conduct a formative assessment of the socio-cultural factors that can influence health, particularly in the rural iTaukei communities. As previously noted, urban communities tend to concentrate on individual lifestyles, choices, and personal responsibilities. As the interviews in this study from the village participants show, health decisions for iTaukei community must be framed around improvements to the families as a whole, rather than on individualistic perspectives or goals. Subsequently, the focus on enhancing the CBPR approach in conducting formative assessments of socio-cultural factors to examine the influence on obesity and related diseases was a key focus of this research. The CBPR approach is, therefore, highly recommended for research where Indigenous communities are exhausted from multiple unexplored problems.

The community in this doctoral study clearly identified the need for positive social change and culturally tailored programmes that result in healthy outcomes. The researcher believes this CBPR approach was culturally appropriate, as was Israel, et al. (2010) approach, which also established that people respond positively to success (empowerment, social cohesion, and the power of social reciprocity). Therefore, understanding the socio-cultural factors in the prevalence of obesity, and employing a CBPR approach to successfully reinforce achievable changes, would highlight the

key strengths of a community rather than apportioning blame for its shortcomings.

6.10 CONCLUSION

This chapter has discussed the findings from this doctoral study. The initial segment of the discussion started with the different types of environments: political, socio-cultural, physical, and economic, influencing the prevalence of obesity in the rural iTaukei communities. The final segment discussed the analysis of applying culturally appropriate health promotion and the importance of using CBPR principles to bring social change in the iTaukei communities. The next chapter completes the doctoral thesis by highlighting the contribution this research makes towards obesity prevention and provides recommendations, particularly to the policymakers and clinicians who encounter challenges in the clinical environment.

Chapter 7: Conclusion

7.1 INTRODUCTION

This chapter identifies the significant points in the research by summarising and drawing conclusions linked to the literature review in Chapter 2, the research approach and research strategies as discussed in Chapter 3 and 4, the findings of the study found in Chapter 5, and the interpretation and recommendations discussed in Chapters 6 and 7.

The researcher highlights the key strengths and limitations of this research; it is important that the main findings could be useful for academic researchers in future endeavours to study the iTaukei community's health or health regimes. This research, in this location, presents a groundbreaking initiative towards changing the prevalent perceptions of the studied community.

This chapter completes the doctoral thesis by stressing the importance of this study's contribution towards understanding the socio-cultural factors and applying the CBPR principles contributing to obesity in rural iTaukei communities in Fiji.

7.2 CONCLUSIONS ABOUT THE RESEARCH QUESTION

The focus of this research was to understand the socio-cultural context of obesity in the rural iTaukei communities in Fiji using the principles of CBPR. Three research questions were formulated with community consultation to address health and wellbeing of the community:

1. What are the general health characteristics relevant to obesity in rural areas of Fiji?
2. Which socio-cultural constructions of health are relevant to obesity from the perspectives of a rural community in Fiji?
3. What are the strategies for enhancing the capacity for obesity prevention and action in rural areas of Fiji?

These questions form subsections 7.2.1, 7.2.2, and 7.2.3 of this chapter, where conclusions are drawn from the analysis and discussion of the study. Based on the findings of the research questions it can concluded that community consultation plays a significant role in improving social and emotional wellbeing and in providing culturally safe health promotion programmes that are accessible and useful, and add meaning to the relevant community.

7.2.1 Research Question 1

'What are the general health characteristics relevant to obesity in rural areas of Fiji?'

Based on the findings of the village health survey, data clearly demonstrate the poor health status of the community. Nearly 65% of people were newly diagnosed with diabetes in the past year, and 50% of the total adult population in the village are obese. According to this research, the community had been not been managing their health and wellbeing. Some of the impact factors relate to unhealthy food and lack of physical activity.

During the time frame of this research, it became evident that the community is not able to make healthy choices due to lack of knowledge

related to nutrition and lack of appropriate physical activity facilities. This demonstrated that the researcher needed to approach the community and work with them (rather than work on them), to empower them to take charge of their own health. This leads to Research Question 2.

7.2.2 Research Question 2

'Which socio-cultural constructions of health are relevant to obesity from the perspectives of a rural community in Fiji?'

The findings of the literature review, the community consultation, village health survey, and interviews from participants, confirm that socio-cultural factors are contributing to obesity. However, environmental factors also play an important role. These environment factors – physical, economic, socio-cultural, and political – are interrelated and influence the wellbeing and health of the rural iTaukei community. These factors have micro- and macro-environmental dimensions and have a major impact on community wellbeing and on disparities in health care between urban and rural dwellers. This research confirms that to influence the health and wellbeing of the community and to overcome health disparities requires culturally safe approaches. This research identified a gap between urban and rural health service delivery.

7.2.3 Research Question 3

'What are the strategies for enhancing the capacity for obesity prevention and action in rural areas of Fiji?'

Findings from the data analysis suggest that rural communities are lacking culturally appropriate health promotion programs. The iTaukei health workforce delivers the government programmes, which are set by rules, have a one-approach-fits-all mentality, and are implemented in a similar form all

over the nation. This doctoral research demonstrates that health care workers need to operate at the local level and work with the community rather than just meeting the key performance indicators on paper. This research may bring major impacts on health workforce practitioners, policymakers, and academics who need to begin working collectively with the local community to eliminate health disparities, enhance health literacy, and tailor culturally appropriate health promotions programs at the local community level.

7.3 RECOMMENDATIONS

The key components identified in the CBPR process can guide health, academic and community workers to have targeted approaches in addressing the socio-cultural determinants of health by focussing on prevention rather than treatment. In presentations on the findings from this study, question was raised, 'Why doesn't this research explore obesity from the bio medical model?' My response was previous research has addressed obesity in this way but there were increasing gaps of health inequalities. The recommendations of this research give health professionals and community workers a platform to explore the socio-cultural understanding of obesity in health and wellbeing within the ITaukie culture. The research allows one to look at health and wellbeing from the cultural lens and that includes the perspectives of the rural iTaukei community.

7.3.1 Recommendation for Policymakers and Health Leaders

The findings of this mixed methods research substantiated previous quantitative studies that documented low levels of obesity prevention knowledge and awareness in the rural iTaukei community (Maton, 2008;

Mavoa, et al., 2012; Mittelmark, Hunt, Heath, & Schmid, 1993). The research data presented here has implications for policymakers and Ministry of Health leaders' delegates who can inform, and improve health services for, the rural iTaukei communities. Numerous barriers to service delivery continue to prevent iTaukei communities from successfully engaging with the health services. iTaukei engagement with health services in Naitasiri district was characterised as being one of distrust, poor communication, and overall pessimism about the future of institutional health care. Too often, the entire blame is apportioned to those expected to respond, rather than formulating a critical examination of the services.

These results reinforce previous research that shows a long history of culturally insensitive health services for the rural iTaukei communities (Asante, Roberts, & Hall, 2011; Negin, Roberts, & Lingam, 2010). As noted earlier in this chapter, increasing understanding about socio-cultural factors and obesity, increasing health literacy, and conducting culturally tailored health promotion research are the key steps in overcoming health-related issues currently facing the community. To reduce these barriers to service, policymakers and health leaders should consider improving training mechanisms for health practitioners.

This thesis also provides recommendations for improved communication to help create a comprehensive understanding of the current needs of the iTaukei villagers. The most significant recommendation is to bring government agencies to the rural iTaukei communities, rather than the reverse, that is, taking the iTaukei villagers to the agencies. It is important that health approaches adopted in iTaukei communities are actively

incorporated into mainstream health services to ensure they provide maximum health benefits to the people. Effective engagement with iTaukei community must change, such as by adjusting appointment times and changing the way services are structured and delivered. For example, key informants recommended health appointments not be scheduled at the end of the month when the villagers often face financial constraints. Prolonged or regular visits should be considered to allow the health care staff maximum time to establish relationships and visit the community. It is also recommended the area adopts a multisectoral approach while delivering culturally sensitive health promotion programs and initiatives.

When planning future health promotions for the prevention of obesity, health staff members should prioritise research that focuses on perception building and understanding of diseases and, importantly, considers the socio-cultural meaning given to obesity in the society.

In addition, it is important for all government agencies to communicate and collaborate with each other as a team rather than working in isolation. Employing CBPR principles can help ensure the responsiveness of health programs towards meeting the community needs while increasing the chances of support and improving intervention outcomes. In doing so, the programs will be shaped and determined by the needs of the community.

This thesis drew upon an understanding of the socio-cultural constructs of obesity prevention in iTaukei communities, particularly in the rural regions where individuals form an integral part of social cultures. It recommends that policymakers and the Ministry of Health Fiji incorporate social policy and health approaches in primary health care services to eliminate health

disparities across the iTaukei community. Internationally, there are varying definitions of social policy, although in general all determine a course of action to bring stated outcomes to a population. Social policy, as defined by Cheyne, O'Brien, and Belgrave (1997, p. 25), comprises 'actions that affect the well-being of a community through shaping the distribution of and access to goods and resources'. These authors perceived that there is an inherent tension within policy analysis practices since social policies may affect communities unevenly, therefore making it highly unlikely that all individuals in society will advantage from a policy campaign on an equal basis. Fiji's current health policies remain based on the British colonial times and have very little cultural relevance to addressing lifestyle contributions towards contracting diseases.

In this research, some village participants were living in isolation in remote areas and either did not have any sustainable income source or were deprived of any governmental support for their survival and welfare. These villagers' income and welfare came from informal systems. Several were recipients of inherited family money available for their generation only. Others belonged to faith-based organisations, community groups, or other cultural safety networks that provided sufficient only to help them survive on basic provisions. Consequently, this research culminates with a recommendation for government agencies to improve their understanding of the importance of implementing social policy that enables the iTaukei villagers to attain good health and adequate long-term sustenance.

iTaukei community members, in the rural areas, require the engagement of a culturally appropriate participatory approach within the

formal health care system to overcome health issues. To enhance health and wellbeing further, there is a need for social policies to amalgamate and collaborate with informal local systems. Therefore, this research highly recommends the work of Durie and his colleagues who focused on examining the policy outcomes for Indigenous communities and their need to include participatory and indigeneity design and equality goals (Durie, 2004; Durie & Matatu, 2005). These principles influenced the interpretation of policy as explained by this research.

This research will impact the National Strategic Plan of Fiji 2016–2020. According to the Ministry of Health Fiji (2016), the National Strategic Plan of Fiji 2016–2020 focuses on two strategic pillars. The first pillar elaborates on 'preventive, curative and rehabilitative health services' and the second focuses on the 'strengthening health systems'. This research provides evidence that CBPR and bottom-up approaches are necessary to address the socio-cultural determinants of health in rural iTaukei communities and should be tailored to the local cultural context. Culturally tailored health promotion strategies will improve healthy well-being at the community level. The role of identifying and understanding the cultural determinants of health is not limited to government departments or non-government organisations alone. The local community and influential people in the community (rugby players, politicians and village chiefs) have the ability to promote community well-being. A study was conducted by Kremer et al. (2017) on knowledge exchange in the Pacific: 'Outcomes of the Translational Research into Obesity Prevention Policies for Communities'. The study, focusing on Fiji from 2009 to 2012, used a top-down approach to assess a knowledge

broking program. The study aimed to utilise evidence-based policy design skills and elaboration of the national policy to increase enactment of obesity-related policies. The findings revealed no significant changes to the number of obesity related policies, which were enacted pre- and post-intervention. Participating organisations were not using evidence-based research to develop policy however, there was a significant improvement of individuals' utilisation of evidence-based research. My research demonstrates that a bottom-up approach integrates in the community setting and can be translated into obesity prevention evidence based practice.

The multi-sectoral approaches, I have described is linked to the experience of empowering the community for better health well-being and seeking opportunities to design obesity prevention policy (World Health Organization, 2012), where more than one government department works together to address community in rural ITaukei communities. For example, physical activity in the village could be supported by the Ministry of Youth and Sports, providing professional support and equipment, and the Ministry of iTaukei, providing guidance around cultural safety and venues for activities. Likewise, a government department, such as the Ministry of Agriculture, Rural and Maritime Development, could provide support and guidance in multiple iTaukei communities. A CBPR approach will align culturally appropriate health promotion activities towards developing public health policy and will embed community activities into settings and services provided to their members (Murray et al., 2017). Norman, Nyberg, Elinder, and Berlin (2016) suggests that a one size fits all approach is insufficient to address the complexities of communities, and may well be inadequate for the

iTaukei context, where community life experience and values, beliefs, and moral codes can be at odds with well-being. The cooperation strategy for Fiji 2013-2017 guidelines developed by the World Health Organization (2012) state government departments need to provide ongoing support to ensure effective implementation of the policy, but the programmes are conceived, owned and delivered by the community-level groups for their own settings.

In this thesis, I contend health policy design involves not simply material process, but the adoption of community consultation methods utilising the existing population, which leads to change. The public health programmes have been significant in changing the local understanding of well-being. The CPBR approach is the method to direct an iTaukei rural nationwide bottom-up approach, which empowers the community to run their own health promotion programs suitable to each setting.

This research identified how CBPR could incorporate socio-cultural perspectives in understanding the issues at hand. In particular, it highlighted how socio-cultural determinants could inform social policies, in contrary to the current system, which often adopts Western measures and outcomes that do not address the health disparities facing the iTaukei community. It is suggested that policymakers and Ministry of Health Fiji leaders need to revitalise community development by fostering community consultation and culturally appropriate public health policy and by putting rural iTaukei communities at the centre of care.

7.3.2 Recommendation for the Public Health Promotion Practitioners

This study has implications for public health promotion practitioners to help shape the design and applicability of culturally sensitive health

promotion. The foundation of successful behavioural change within iTaukei communities lies in cultural appropriateness rather than as a Western theoretical framework. Engaging the community in addressing barriers to enable better health outcomes is important. It is recommended that public health promotion practitioners begin early and ongoing engagement with the major stakeholders, which is critical in disseminating research findings and translating research into policy.

Further, this research also has implications for public health promotion practitioners to help implement formative research to improve welfare and health-related outcomes. The foundation for successful exploration of a community's health-related issues lies in understanding key social determinants of health including socio-cultural, physical, economic, and political environments. Resultant programmes can help address real issues existing within the rural iTaukei communities to determine a culturally appropriate framework and, significantly, engage the local community in consultation. Furthermore, early and ongoing engagement with key stakeholders is critical. This research shows there can be more responsiveness when issues are gathered from community-based initiatives, which ultimately ensures more participation from the local people as well as a long-term engagement. Culturally sound processes, along with in-depth qualitative interviewing, are some of the successful methods of action that are essential in defining behaviours and getting the needed response from the respondents. Also, health literacy and health promotion programs must be culturally tailored as well as developed to suit the needs and beliefs of the Indigenous communities.

Community consultation is an essential component in all health promotion–related campaigns designed to promote awareness of diseases and disorders. Community consultation is also necessary for policy planners before producing relevant health promotion campaigns to identify the target community's beliefs and perceptions and then tailoring the scheme to be delivered (Merzel & D'Afflitti, 2003). Health promotion campaigns should be based on the needs, beliefs, and perceptions of the target community. Awareness of these needs, beliefs, and perceptions is vital in understanding the socio-cultural context to ensure longer term participation from a community. Public health promotion practitioners should consider applying CBPR principles in developing programs for educating the public and promoting general health, since the main component of CBPR is participation, which is in itself a very successful part of health promotion schemes and programs.

Understanding the socio-cultural determinants of health is perhaps, the most difficult component of gathering knowledge about a population. While this may be significant in identifying key information, obtaining this knowledge is often not an easy task (Whitney & Trosten-Bloom, 2010). Successful health promotion campaigns must develop with community consultation for gathering a richer understanding about different catalysts and barriers. To develop a nuanced understanding of Indigenous experiences, using community consultation to seek information is vital. This brings the practitioner closer to the key informants and places them in a convenient position for gathering the right information. As an example, while the WHO recommends thirty minutes of moderate physical activity to maintain

appropriate health and fitness, my qualitative research results suggested otherwise. From the perspective of an iTaukei community, they lack sporting facilities and infrastructure (including space and proximity) so they cannot indulge in physical activity or sport for this duration. Hence, in the context of my research, the WHO's recommendation appears to be somewhat unrealistic and unattainable.

The specific roles assigned to gender, as indicated by the community, are also questionable when examining capacity for sports and physical activities. Key informants recommended that women have a separate playground where they could engage in physical activity during the time their children and husbands are away from the village. These participants suggested governmental authorities should come forward to increase health awareness amongst the people and educate the community about the benefits of being healthy and active. As a result, this research highlighted interventions that could increase iTaukei people's engagement in sports; interventions that would be culturally appropriate and tailored accordingly.

The research suggested a playground for the villagers, approximately one kilometre distant from the village; however, ultimately a landowner from a different clan reclaimed this land.

Given the low health literacy of iTaukei communities, future research and educational programs must be established engaging CBPR principles. These CBPR principles are most likely to be successful since community engagement has the potential to be culturally sensitive while constructing a good understanding of varying cultural specificities between communities. This ensures the use of a method which, based on a stronger social

structure, possesses the capacity to enhance socio-cultural wellbeing (Meo-Sewabu, 2015).

Community engagement is, therefore, recommended as an appropriate health participatory approach to seek participation from the community while reflecting upon their Indigenous cultural beliefs, norms, practices, and customs for the development of health promotion and literacy.

7.3.3 Recommendations for Local Community Health Clinicians

The research findings offer beneficial suggestions for local community health providers to facilitate their understanding of the experiences of iTaukei communities towards the increased prevalence of obesity while identifying primary health care strategies. By understanding the long-term barriers that influence health decisions within the community, local community health clinicians can reflect upon their communication interactions with iTaukei communities while assessing community or individual health needs and preferences.

The significant recommendation for local community health clinicians is that they need to enable community ownership by listening to and starting with the voices and goals of the community in planning and delivering health promotion programs. Local community health clinicians need to enable communities by acknowledging and appreciating iTaukei culture, traditional ways, and the contribution of the community. It is recommended that the needs of the iTaukei people should clearly be understood; for example, it must be understood that at least one member of each family from the community will have a lifestyle-related disease. This understanding will help local community health clinicians and the local researchers to examine the

problem at hand, and contribute towards developing long-term solutions. For some iTaukei individuals, obesity is perceived as normal rather than as a disease, revealing their lack of understanding. This means lessons on healthy diet and moderate physical activity can only be successfully learned after they comprehend how obesity is an ‘issue’ for them. In most instances, this appears to be realised only when iTaukei communities have directly observed the complications of obesity by living with a family member or relative who has a related disease. Therefore, community health clinicians should anticipate a lack of education and awareness, and design and implement health promotion activities accordingly.

Local community health workers also need to enable community ownership by assuring significant and equitable participation and power in decision-making in the iTaukei community, including those facing social, cultural, political, and economic rejection. Currently, community support and engagement is the main factor that needs to be developed by all practitioners and requires concerted encouragement and motivation. Community health clinicians should consider their communication approach when interacting with iTaukei groups to ensure they are imparting culturally relevant health-related information. This research identified noticeable communication gaps between community health clinicians and the iTaukei communities due to a lack of awareness and knowledge about the importance of each other’s role. This was attributed to the prevalence of a focus on tasks, poor community engagement, and Government-induced time frames, rather than to the needs of the community itself. My research recommends that for a primary health care model to be truly applicable to the community, it needs to be redesigned

so as to better incorporate the cultural, emotional, familial, and spiritual needs of the community under study. It is important to recognise that understanding the past is important for engaging iTaukei people, simply because their social aspects of life need to be discovered along with studying other cultural traditions before the information related to health care and health promotion can be disseminated to them. For example, in this study, before asking the community about health issues, I had spent time talking to these people about their social life, such as their family histories, their partners and children, their past stories, and related aspects. This opportunity offered me closer insights into their lifestyles, which I had not known, due to my migration to New Zealand. This also helped build trust between the respondents and myself so that we could capitalise on a shared understanding of the issue at hand.

Positive approaches and encouragement help in addressing the concerns of iTaukei communities, enabling good interactions between them and the clinicians. It is important to recognise that a gap in communication and cultural disparities could result in negative outcomes; this must be avoided. Several participants in my study responded that they experienced or observed a derogatory attitude by the health clinicians towards their families. These health clinicians were completely oblivious to the fact that these people were regarded as affluent and influential within their respective groups. Poor food choices, a bigger portion of meals, and lack of physical activity should not only be considered from the biomedical perspective, but rather the socio-cultural context of the topic should also be considered.

The loss of cultural traditions, coupled with a misunderstanding about their cultural norms, could result in implications for general health. For example, a traditional gathering of nutritious *Mangitilevu* (community feast), which is mainly regarded as a food-sharing activity, must also be considered and acknowledged from the perspective of hospitality. Similarly, larger proportions of the meal also indicate a sense of celebration and merriment.

7.3.4 Further Implications for Researchers

In light of the discussion in my previous chapters, CBPR research data is primarily focused on the generation of local knowledge and producing a change in targeted communities (Minkler & Wallerstein, 2011). It is important to recognise that communities are unique and that these unique features affect how they function and will influence the success of health interventions.

Precisely because the style and delivery of interventions should be derived from the needs of the community itself, generalisability will compromise a given situation. As Tipene-Leach, et al. (2013) suggested, principles of community-wide lifestyle intervention might be similar to each other; however, their outputs will always vary. Therefore, my research demonstrates that low socioeconomic rural iTaukei communities lack funding and infrastructure that would enable them to prevent or reduce obesity. To overcome these issues, I recommend a cost-effective initiative and approach.

While my research findings are not generalisable, the CBPR approach employed in my research would produce beneficial advice regarding culturally appropriate interventions for the prevention of obesity among iTaukei people.

The next section of this thesis provides recommendations for future researchers who may work with the iTaukei populations regarding the same, or different, health-related matters. In this regard, I have also provided and explained supportive examples to clarify my viewpoint.

This doctoral study discusses the need for contemporary approaches to obesity prevention to reduce or diminish cultural disparities and economic inequities between urban communities and rural iTaukei communities, while reducing the rate of NCDs. I have argued that traditional research approaches are a poor fit with Indigenous communities. I have explained how a CBPR approach provides a culturally appropriate explanation and assumption for enacting local action-oriented approaches towards resolving the problem. Muhammad et al. (2015) confirm that intervention strategies designed following CBPR principles reflect cultural values, behavioural preferences, and the environmental context of the participating community while reshaping interventional approaches towards the population.

I have provided several examples of how the CBPR process discussed in this thesis reflects cultural values, most importantly towards the traditions of the studied community. These are essential lessons for future researchers. One of the ways in which I prioritised Indigenous knowledge and cultural conventions was through forming the foundation of formative research on the concept of a bottom-up approach that was primarily constructed by partnerships within the community. The formative research was structured as an extended family. This is referred to by international researchers as a ‘Family of interest’ (Israel, et al., 1998; Meo-Sewabu, 2015; Morrison et al., 2008; Wallerstein & Bernstein, 1994). This requires researchers to act as co-

learners while conducting research with the communities. Through bypassing the ‘expert’ and the hierarchical research approach between researcher and the researched, the researchers will be able to garner more support from the community, and consequently, more trust will be regained. Researchers should also approach iTaukei village elders for optimal guidance and motivation throughout the inception of the project while taking guidance to administer the research process in a culturally friendly manner.

The CBPR process also reflects the understanding of socio-cultural preferences and the environmental context of the community under study and provides the basis of enriched knowledge about the issues facing the community. Researchers should consider a qualitative research design because it is an excellent way to ascertain how different iTaukei people react to and perceive health interventions while considering the socio-cultural aspects of avoiding obesity through communal initiatives and promotional programs. Although quantitative statistical data can demonstrate that obesity is a severe problem in the community, it is only through qualitative, in-depth interviews and community interactions that we can find out ‘why’.

Key informants within the iTaukei community described complex historical, structural (service barriers that prevent engagement), economic (cost of healthy food/lack of time), and socio-cultural reasons for poor health and higher rates of obesity. In addition to community-wide lifestyle interventions, conceptual approaches based on communal perceptions of the problem at hand can also be the basis for future research on identifying socio-cultural factors, for example, the community and family support that can help shape behaviours. In the case of my research, the community

members recognised strong positive messages and provided information regarding specific socio-cultural factors for their obesity. They also presented ideas for future discourse relating to the health of their families and relatives.

Understanding the iTaukei perception of obesity is a critical element before further interventions can be administered based on its cultural appropriateness. Moreover, researchers need to understand how a target audience's experiences, norms, customs, ideas, perceptions, values, beliefs, and needs change over time so that they may understand their reactions towards probable interventions and attract positivity from them towards any interventions.

Qualitative methods, such as participant interviews and community *Talonoa* (dialogues), provide a worthy opportunity to gather rich data about historical, social, economic, and environmental barriers and base results on the presumptions and attitudes of the studied community. A qualitative approach might also prove useful for working with other ethnic communities in Fiji who are also facing high rates of obesity, for example, the Fijian Indians, Banadan, and Rotuman populations.

This research clarifies the contention and contrast between a colonisation understanding of biomedical models and lifestyle diseases, including the special explanation by the iTaukei communities towards their cultural, social, familial, and communal belongingness to one another. This also makes the adoption of the CBPR approach essential for researchers in Indigenous communities, a point also acknowledged by Cammock, Derrett, and Sopoaga (2014) through the Fonofale house model. By guiding researchers and academics in acknowledging, recognising, and incorporating

Indigenous health approaches into academic research, CBPR may be the most successful approach, as demonstrated throughout this research. Considering the epistemological obstacles of the approach, it is important that every researcher understands the context well before putting this approach to practice. As stated in a participatory project, 'I Want to Walk with My Moko', conducted in New Zealand by Edgar, Gage, Farmer, and Kirk (2015), CBPR is indeed an integral component of working with Indigenous populations; even more so, because it takes into consideration the grass-root causes of illnesses by taking into account of different perceptions and opinions of the people while acknowledging how the scientific and cultural explanations of various knowledge types could best be utilised in working with the target communities.

Following on from Wallerstein and Bernstein (1994) nine CBPR principles, I recommend this as an option to serve as a benchmark for assessing how different researchers within Indigenous communities view a community from an appropriate cultural perspective. As an example, the principles of resilience and research design that acknowledges the community's strengths can guide researchers away from a deficit approach to one that places primacy on communicating positive stories from the community. Adopting a holistic approach to health can reframe community public health programmes away from positioning Indigenous people as a problem to highlighting community strengths and resilience.

7.4 THE WAY FORWARD

One of the advantages of exploring iTaukei socio-cultural factors associated with obesity in rural areas was that it translated and disseminated

academic research into a beneficial resource. Also, exploring and understanding socio-cultural factors contributing to obesity through the CBPR process supported the argument that CBPR research can question personal, academic framing of words said by others. Wallerstein and Bernstein (1994) moved beyond what Spivak (1988) stated that speaking for community members is important.

However, one of the weaknesses of CBPR is that there is limited evidence to demonstrate the contributions of this approach in improving health disparities (Viswanathan, et al., 2004; Wallerstein, et al., 2008). As part of a postdoctoral study, it is recommended that implementation and an evaluation should be designed to investigate the change in health literacy and increased physical activity among iTaukei communities in the village, for example, by monitoring physical activity using a pedometer, after the research findings have been distributed. Questions asked should include: 'Was there an increase in knowledge?', 'Was there a change in attitude or behaviour?' These questions need to be asked before the positive social change could be assessed. One of the ongoing obstacles with this type of research is a lack of sufficient evidence to evaluate behavioural changes, in this instance among iTaukei communities. As discussed in the literature review, many reasons are cited for this problem. Mooney-Somers and Maher (2009) state that there are very few studies which distinguish between the cultural sensitivity of health promotion programmes and the contribution of socio-cultural factors to understanding obesity and other disorders, with only a handful of studies that have dealt with the issue. However, evidence of effective cultural sensitivity health promotion conducted in the Indigenous

community highlighted the benefits of employing CBPR, improving health literacy, and eliminating health disparity while undertaking initiatives to prevent obesity and increasing public awareness (Koelen & Van Den Ban, 2004; Kruger, et al., 2005; Minkler, 2010; Mooney-Somers & Maher, 2009). More recent research discussed best-practice principles for community-based obesity prevention programmes through community engagement, research design, evaluation, intervention, and sustainability (King, et al., 2011). King and colleagues found evidence around applying the CPBR approach and exploring the socio-cultural factors towards obesity prevention, particularly in the rural Indigenous communities. The researcher believes testing the effectiveness of this particular research would contribute to this small field of published literature by looking specifically at the CBPR approach and its contributions in understanding socio-cultural determinants of health, employing culturally tailored health promotion activities, and enhancing health literacy within the Indigenous populations in Fiji

7.5 CONCLUSION

In conclusion, obesity prevention must primarily be based on socio-cultural appropriateness, and must always be a priority in identifying the mediums of instruction best suited to the iTaukei communities. If culturally tailored obesity prevention campaigns are not made a definitive part of the healthcare sector, the increasing costs of health care and treatment costs for NCDs will overwhelm and exhaust the entire Fijian health system. Such a scenario comes with high costs to the culture and society.

Higher mortality rates of iTaukei families pose a critical issue for direction and leadership and may ultimately destroy entire iTaukei clans. The

Fijian Government, along with international agencies such as WHO and AusAID, academic institutions, and community health clinicians, must support, create, and report on different campaigns for the prevention of obesity using CBPR principles as an essential mode of delivering health promotion–based programmes. It is time for the research process to be made an integral component of the research method in order to engage the community and develop appropriate strategies.

In addition, there is a need to report the shortcomings and setbacks that are encountered in this approach so that sufficient structural changes can be made as part of community public health programmes, and which can be adequately resourced. With the help of this research, the CBPR approach has proven to be a useful step in working with the iTaukei communities. It is highly recommended that this is applied to future research with iTaukei communities, particularly with regard to research that focuses on the widening gaps between urban, rural, and remote iTaukei communities.

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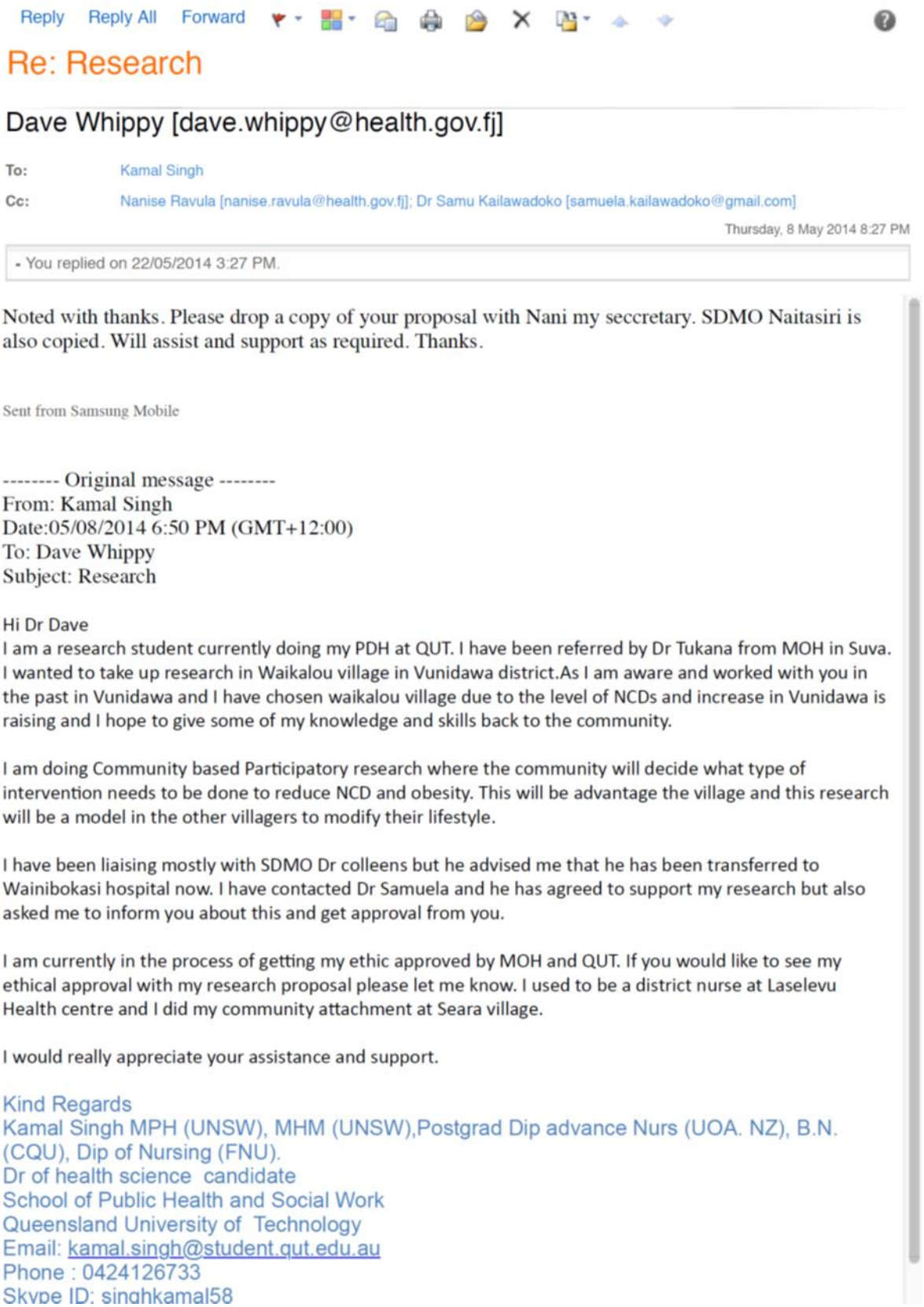
Appendices

Appendix A

The International Classification of adult underweight, overweight and obesity according to BMI.

Classification	**BMI(kg/m²)**	
	Principal cut-off points	**Additional cut-off points**
Underweight	**<18.50**	**<18.50**
Severe thinness	<16.00	<16.00
Moderate thinness	16.00 - 16.99	16.00 - 16.99
Mild thinness	17.00 - 18.49	17.00 - 18.49
Normal range	**18.50 - 24.99**	**18.50 - 22.99**
		23.00 - 24.99
Overweight	**≥25.00**	**≥25.00**
Pre-obese	25.00 - 29.99	25.00 - 27.49
		27.50 - 29.99
Obese	**≥30.00**	**≥30.00**
Obese class I	30.00 - 34.99	30.00 - 32.49
		32.50 - 34.99
Obese class II	35.00 - 39.99	35.00 - 37.49
		37.50 - 39.99
Obese class III	≥40.00	≥40.00

Appendix B



Reply Reply All Forward

Re: Research

Dave Whippy [dave.whippy@health.gov.fj]

To: Kamal Singh

Cc: Nanise Ravula [nanise.ravula@health.gov.fj]; Dr Samu Kailawadoko [samuela.kailawadoko@gmail.com]

Thursday, 8 May 2014 8:27 PM

- You replied on 22/05/2014 3:27 PM.

Noted with thanks. Please drop a copy of your proposal with Nani my seccretary. SDMO Naitasiri is also copied. Will assist and support as required. Thanks.

Sent from Samsung Mobile

-------- Original message --------
From: Kamal Singh
Date:05/08/2014 6:50 PM (GMT+12:00)
To: Dave Whippy
Subject: Research

Hi Dr Dave
I am a research student currently doing my PDH at QUT. I have been referred by Dr Tukana from MOH in Suva. I wanted to take up research in Waikalou village in Vunidawa district.As I am aware and worked with you in the past in Vunidawa and I have chosen waikalou village due to the level of NCDs and increase in Vunidawa is raising and I hope to give some of my knowledge and skills back to the community.

I am doing Community based Participatory research where the community will decide what type of intervention needs to be done to reduce NCD and obesity. This will be advantage the village and this research will be a model in the other villagers to modify their lifestyle.

I have been liaising mostly with SDMO Dr colleens but he advised me that he has been transferred to Wainibokasi hospital now. I have contacted Dr Samuela and he has agreed to support my research but also asked me to inform you about this and get approval from you.

I am currently in the process of getting my ethic approved by MOH and QUT. If you would like to see my ethical approval with my research proposal please let me know. I used to be a district nurse at Laselevu Health centre and I did my community attachment at Seara village.

I would really appreciate your assistance and support.

Kind Regards
Kamal Singh MPH (UNSW), MHM (UNSW),Postgrad Dip advance Nurs (UOA. NZ), B.N. (CQU), Dip of Nursing (FNU).
Dr of health science candidate
School of Public Health and Social Work
Queensland University of Technology
Email: kamal.singh@student.qut.edu.au
Phone : 0424126733
Skype ID: singhkamal58

Appendix C

WHO STEPS Instrument
(Core and Expanded)

The WHO STEPwise approach to chronic disease risk factor surveillance (STEPS)

World Health Organization
20 Avenue Apia, 1211 Geneva 27, Switzerland

For further information: www.who.int/chp/steps

STEPS Instrument

Overview

Introduction

This is the generic STEPS Instrument which sites/countries will use to develop their tailored instrument. It contains the:

CORE items (unshaded boxes)
EXPANDED items (shaded boxes).

Core Items

The Core items for each section ask questions required to calculate basic variables. For example:

current daily smokers
mean BMI.

Note: All the core questions should be asked, removing core questions will impact the analysis.

Expanded items

The Expanded items for each section ask more detailed information. Examples include:

use of smokeless tobacco
Sedentary behavior.

Guide to the columns

The table below is a brief guide to each of the columns in the Instrument.

Column	Description	Site Tailoring
Number	This question reference number is designed to help interviewers find their place if interrupted.	Renumber the instrument sequentially once the content has been finalized.
Question	Each question is to be read to the participants	Select sections to use. Add expanded and optional questions as desired.
Response	This column lists the available response options which the interviewer will be circling or filling in the text boxes. The skip instructions are shown on the right hand side of the responses and should be carefully followed during interviews.	Add site specific responses for demographic responses (e.g. C6). Change skip question identifiers from code to question number.

Code	The column is designed to match data from the instrument into the data entry tool, data analysis syntax, data book, and fact sheet.	This should never be changed or removed. The code is used as a general identifier for the data entry and analysis.

WHO STEPS Instrument
for Chronic Disease Risk Factor Surveillance

Survey Information

Location and Date		Response	Code
1	Cluster/Centre/Village ID	⌊_⌊_⌊_⌊_	I1
2	Cluster/Centre/Village name		I2
3	Interviewer ID	⌊_⌊_⌊_⌊_	I3
4	Date of completion of the instrument	⌊_⌊_ ⌊_⌊_ ⌊_⌊_⌊_⌊_ dd mm year	I4

Participant Id Number ⌊_⌊_⌊_ ⌊_⌊_⌊_ ⌊_⌊_⌊_

Consent, Interview Language and Name		Response	Code
5	Consent has been read and obtained	Yes 1 No 2 **If NO, END**	I5
6	Interview Language *[Insert Language]*	English 1 *[Add others]* 2 *[Add others]* 3 *[Add others]* 4	I6
7	Time of interview (24 hour clock)	⌊_⌊_ : ⌊_⌊_ hrs mins	I7
8	Family Surname		I8
9	First Name		I9
Additional Information that may be helpful			
10	Contact phone number where possible		I10

Record and file identification information (I5 to I10) separately from the completed questionnaire.

Step 1 Demographic Information

CORE: Demographic Information			
Question		**Response**	**Code**
11	Sex (*Record Male / Female as observed*)	Male 1 Female 2	C1
12	What is your date of birth? *Don't Know 77 77 7777*	⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋⌊_⌋⌊_⌋ *If known, Go to C4* dd mm year	C2
13	How old are you?	Years ⌊_⌋⌊_⌋	C3
14	In total, how many years have you spent at school or in full-time study (excluding pre-school)?	Years ⌊_⌋⌊_⌋	C4

EXPANDED: Demographic Information			
15	What is the **highest level of education** you have completed? *[INSERT COUNTRY-SPECIFIC CATEGORIES]*	No formal schooling 1 Less than primary school 2 Primary school completed 3 Secondary school completed 4 High school completed 5 College/University completed 6 Post graduate degree 7 Refused 88	C5
16	What is your *[insert relevant ethnic group / racial group / cultural subgroup / others]* **background**?	[*Locally defined*] 1 [*Locally defined*] 2 [*Locally defined*] 3 Refused 88	C6
17	What is your **marital status**?	Never married 1 Currently married 2 Separated 3 Divorced 4 Widowed 5 Cohabitating 6 Refused 88	C7
18	Which of the following best describes your **main work** status over the past 12 months? *[INSERT COUNTRY-SPECIFIC CATEGORIES]* *(USE SHOWCARD)*	Government employee 1 Non-government 2 Self-employed 3 Non-paid 4 Student 5 Homemaker 6 Retired 7 Unemployed (able to 8 Unemployed (unable to 9 Refused 88	C8

19	How many people older than 18 years, including yourself, live in your household?	Number of people ⌊_⌋⌊_⌋	C9

EXPANDED: Demographic Information, Continued			
Question		**Response**	**Code**
20	Taking **the past year**, can you tell me what the average earnings of the household have been? *(RECORD ONLY ONE, NOT ALL 3)*	Per week ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ *Go to T1*	C10a
		OR per month ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ *Go to T1*	C10b
		OR per year ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ *Go to T1*	C10c
		Refused 88	C10d
21	If you don't know the amount, can you give an **estimate** of the annual household income if I read some options to you? Is it *[INSERT QUINTILE VALUES IN LOCAL CURRENCY]* *(READ OPTIONS)*	More than≤ 2000 More than, ≤ 400 More than ≤ 6000 More than ≤ 8000 More than ≤ 10000 Don't Know Q 6	C11

Step 1 Behavioural Measurements

CORE: Tobacco Use			
Now I am going to ask you some questions about various health behaviours. This includes things like smoking, drinking alcohol, eating fruits and vegetables and physical activity. Let's start with tobacco.			
Question		**Response**	**Code**
22	Do you currently smoke any **tobacco products**, such as cigarettes, cigars or pipes? *(USE SHOWCARD)*	Yes 1 No 2 *If No, go to T6*	T1
23	Do you currently smoke tobacco products **daily**?	Yes 1 No 2 *If No, go to T6*	T2
24	How old were you when you **first started** smoking daily?	Age (years) ⌊_⌋⌊_⌋ *If Known, go to T5a* Don't know 77	T3
25	Do you remember how long ago it was? *(RECORD ONLY 1, NOT ALL 3)* *Don't know 77*	In Years ⌊_⌋⌊_⌋ *If Known, go to*	T4a
		OR in Months ⌊_⌋⌊_⌋ *If Known, go to*	T4b
		OR in Weeks ⌊_⌋⌊_⌋	T4c
26	On average, **how many** of the following do you smoke each day? *(RECORD FOR EACH TYPE, USE SHOWCARD)*	Manufactured cigarettes ⌊_⌋⌊_⌋	T5a
		Hand-rolled cigarettes ⌊_⌋⌊_⌋	T5b
		Pipes full of tobacco ⌊_⌋⌊_⌋	T5c

	Don't Know 77	Cigars, cheroots, cigarillos ⌊_⌋⌊_⌋	T5d
		Other ⌊_⌋⌊_⌋ *T5other, If Other, go to else go to T9*	T5e
		Other (please specify): ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ *Go to T9*	T5other

EXPANDED: Tobacco Use

Question		Response	Code
27	In the past, did you **ever** smoke **daily**?	Yes 1 No 2 *If No, go to T9*	T6
28	How old were you when you **stopped** smoking **daily**?	Age (years) ⌊_⌋⌊_⌋ *If Known, go to T9* Don't Know 77	T7
29	How **long ago** did you stop smoking daily? *(RECORD ONLY 1, NOT ALL 3)* *Don't Know 77*	Years ago ⌊_⌋⌊_⌋ *If Known, go to T9*	T8a
		OR Months ago ⌊_⌋⌊_⌋ *If Known, go to T9*	T8b
		OR Weeks ago ⌊_⌋⌊_⌋	T8c
30	Do you **currently use** any **smokeless tobacco** such as *[snuff, chewing tobacco, betel]*? *(USE SHOWCARD)*	Yes 1 No 2 *If No, go to T12*	T9
31	Do you **currently use smokeless tobacco** products **daily?**	Yes 1 No 2 *If No, go to T12*	T10
32	On average, how many **times a day** do you use …. *(RECORD FOR EACH TYPE, USE SHOWCARD)* *Don't Know 77*	Snuff, by mouth ⌊_⌋⌊_⌋	T11a
		Snuff, by nose ⌊_⌋⌊_⌋	T11b
		Chewing tobacco ⌊_⌋⌊_⌋	T11c
		Betel, quid ⌊_⌋⌊_⌋	T11d
		Other ⌊_⌋⌊_⌋ *T11other, If Other, go to else go to T13*	T11e
		Other (specify) ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋ *Go to T13*	T11other
33	In the **past**, did you **ever use** smokeless tobacco such as *[snuff, chewing tobacco, or betel]* **daily**?	Yes 1 No 2	T12
34	During the past 7 days, on how many days did someone **in your home** smoke when you were present?	Number of days Don't know 77 ⌊_⌋⌊_⌋	T13
35	During the past 7 days, on how many days did someone smoke in closed areas **in your workplace** (in the building, in a work area or a specific office) when you were present?	Number of days Don't know or don't work in a closed area 77 ⌊_⌋⌊_⌋	T14

CORE: Alcohol Consumption

The next questions ask about the consumption of alcohol.

	Question	Response	Code
36	Have you **ever** consumed an alcoholic drink such as beer, wine, spirits, fermented cider or *[add other local examples]*?	Yes 1 No 2 *If No, go to D1*	A1a
37	Have you consumed an alcoholic drink within the **past 12 months**?	Yes 1 No 2 *If No, go to D1*	A1b
38	During the past 12 months, **how frequently** have you had at least one alcoholic drink? *(READ RESPONSES, USE SHOWCARD)*	Daily 1 5-6 days per week 2 1-4 days per week 3 1-3 days per month 4 Less than once a month 5	A2
39	Have you consumed an alcoholic drink within the **past 30 days**?	Yes 1 No 2 *If No, go to D1*	A3
40	During the past 30 days, on how many **occasions** did you have at least one alcoholic drink?	Number Don't know 77 ⌊_⌋⌊_⌋	A4
41	During the past 30 days, when you drank alcohol, **on average**, how many **standard alcoholic drinks** did you have during one drinking occasion? *(USE SHOWCARD)*	Number Don't know 77 ⌊_⌋⌊_⌋	A5
42	During the past 30 days, what was the **largest number** of standard alcoholic drinks you had on a single occasion, counting all types of alcoholic drinks together?	Largest number Don't Know 77 ⌊_⌋⌊_⌋	A6
43	During the past 30 days, how many times did you have for **men**: **five or more** for **women**: **four or more** standard alcoholic drinks in a single drinking occasion?	Number of times Don't Know 77 ⌊_⌋⌊_⌋	A7

EXPANDED: Alcohol Consumption

44	During the past 30 days, when you consumed an alcoholic drink, how often was it with meals? Please do not count snacks.	Usually with meals 1 Sometimes with meals 2 Rarely with meals 3 Never with meals 4	A8
45	During each of the **past 7 days**, how many standard alcoholic drinks did you have each day? *(USE SHOWCARD)* *Don't Know 77*	Monday ⌊_⌋⌊_⌋	A9a
		Tuesday ⌊_⌋⌊_⌋	A9b
		Wednesday ⌊_⌋⌊_⌋	A9c
		Thursday ⌊_⌋⌊_⌋	A9d
		Friday ⌊_⌋⌊_⌋	A9e
		Saturday ⌊_⌋⌊_⌋	A9f
		Sunday ⌊_⌋⌊_⌋	A9g

CORE: Diet

The next questions ask about the fruits and vegetables that you usually eat. I have a nutrition card here that shows you some examples of local fruits and vegetables. Each picture represents the size of a serving. As you answer these questions please think of a typical week in the last year.

Question		Response	Code
46	In a typical week, on how many days do you **eat fruit**?	Number of days ▪ ⌊_⌋⌊_⌋ *If* Don't Know 77 *Zero days, go to D3*	▪ D1
47	How many **servings** of fruit do you eat on **one** of those days? (*USE SHOWCARD*)	Number of servings ⌊_⌋⌊_⌋ Don't Know 77	▪ D2
48	In a typical week, on how many days do you **eat vegetables**? *(USE SHOWCARD)*	Number of days ▪ ⌊_⌋⌊_⌋ *If* Don't Know 77 *Zero days, go to D5*	D3
49	How many **servings** of vegetables do you eat on one of those days? *(USE SHOWCARD)*	Number of servings ⌊_⌋⌊_⌋ Don't know 77	D4

EXPANDED: Diet

50	What type of **oil or fat is most often** used for meal preparation in your household? *(USE SHOWCARD)* *(SELECT ONLY ONE)*	Vegetable oil 1 Lard or suet 2 Butter or ghee 3 Margarine 4 Other 5 *If Other, go to D5 other* None in particular 6 None used 7 Don't know 77	D5
		Other ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋	D5other
51	On average, how many meals per week do you eat that were not prepared at a home? By meal, I mean breakfast, lunch and dinner	Number Don't know 77 ⌊_⌋⌊_⌋	D6

CORE: Physical Activity

Next I am going to ask you about the time you spend doing different types of physical activity in a typical week. Please answer these questions even if you do not consider yourself to be a physically active person. Think first about the time you spend doing work. Think of work as the things that you have to do such as paid or unpaid work, study/training, household chores, harvesting food/crops, fishing or hunting for food, seeking employment. *[Insert other examples if needed].* In answering the following questions 'vigorous-intensity activities' are activities that require hard physical effort and cause large increases in breathing or heart rate, 'moderate-intensity activities' are activities that require moderate physical effort and cause small increases in breathing or heart rate.

Question		Response	Code
Work			
52	Does your work involve vigorous-intensity activity that causes large increases in breathing or heart rate like *[carrying or lifting heavy loads, digging or construction work]* for at least 10 minutes continuously?	Yes 1 No 2 *If No, go to P 4*	▪ P1
53	In a typical week, on how many days do you do vigorous-intensity activities as part of your work?	Number of days ⌊_⌋	▪ P2
54	How much time do you spend doing vigorous-intensity activities at work on a typical day?	Hours : minutes ⌊_⌋⌊_⌋ : ⌊_⌋⌊_⌋ hrs mins	P3 (a-b)

55	Does your work involve moderate-intensity activity, that causes small increases in breathing or heart rate such as brisk walking *[or carrying light loads]* for at least 10 minutes continuously? *[INSERT EXAMPLES] (USE*	Yes 1 No 2 *If No, go to P 7*	P4
56	In a typical week, on how many days do you do moderate-intensity activities as part of your work?	Number of days ⌊__⌋	P5
57	How much time do you spend doing moderate-intensity activities at work on a typical day?	Hours : minutes ⌊__⌋⌊__⌋ : ⌊__⌋⌊__⌋ hrs mins	P6 (a-b)
Travel to and from places			
The next questions exclude the physical activities at work that you have already mentioned. Now I would like to ask you about the usual way you travel to and from places. For example to work, for shopping, to market, to place of worship. *[Insert other examples if needed]*			
58	Do you walk or use a bicycle *(pedal cycle)* for at least 10 minutes continuously to get to and from places?	Yes 1 No 2 *If No, go to P 10*	P7
59	In a typical week, on how many days do you walk or bicycle for at least 10 minutes continuously to get to and from	Number of days ⌊__⌋	P8
60	How much time do you spend walking or bicycling for travel on a typical day?	Hours : minutes ⌊__⌋⌊__⌋ : ⌊__⌋⌊__⌋ hrs mins	P9 (a-b)

CORE: Physical Activity, Continued			
Question		**Response**	**Code**
Recreational activities			
The next questions exclude the work and transport activities that you have already mentioned. Now I would like to ask you about sports, fitness and recreational activities (leisure), *[Insert relevant terms]*.			
61	Do you do any vigorous-intensity sports, fitness or recreational *(leisure)* activities that cause large increases in breathing or heart rate like *[running or football]* for at least 10 minutes continuously? *[INSERT EXAMPLES] (USE*	Yes 1 No 2 *If No, go to P 13*	P10
62	In a typical week, on how many days do you do vigorous-intensity sports, fitness or recreational *(leisure)* activities?	Number of days ⌊__⌋	P11
63	How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day?	Hours : minutes ⌊__⌋⌊__⌋ : ⌊__⌋⌊__⌋ hrs mins	P12 (a-b)
64	Do you do any moderate-intensity sports, fitness or recreational *(leisure)* activities that cause a small increase in breathing or heart rate such as brisk walking, *[cycling, swimming, volleyball]* for at least 10 minutes continuously?	Yes 1 No 2 *If No, go to P16*	P13
65	In a typical week, on how many days do you do moderate-intensity sports, fitness or recreational *(leisure)* activities?	Number of days ⌊__⌋	P14

66	How much time do you spend doing moderate-intensity sports, fitness or recreational *(leisure)* activities on a typical day?	Hours : minutes ⌊_⌊_⌋ : ⌊_⌊_⌋ hrs mins	P15 (a-b)

EXPANDED: Physical Activity			
Sedentary behaviour			
The following question is about sitting or reclining at work, at home, getting to and from places, or with friends including time spent sitting at a desk, sitting with friends, traveling in car, bus, train, reading, playing cards or watching television, but do not include time spent sleeping. *[INSERT EXAMPLES] (USE SHOWCARD)*			
67	How much time do you usually spend sitting or reclining on a typical day?	Hours : minutes ⌊_⌊_⌋ : ⌊_⌊_⌋ hrs mins	P16 (a-b)

CORE: History of Raised Blood Pressure			
Question		**Response**	**Code**
68	Have you ever had your blood pressure measured by a doctor or other health worker?	Yes 1 No 2 *If No, go to H6*	H1
69	Have you ever been told by a doctor or other health worker that you have raised blood pressure or hypertension?	Yes 1 No 2 *If No, go to H6*	H2a
70	Have you been told in the past 12 months?	Yes 1 No 2	H2b

EXPANDED: History of Raised Blood Pressure			
71	▪ Are you currently receiving any of the following treatments/advice for high blood pressure prescribed by a doctor or other health worker?		
	Drugs (medication) that you have taken in the past two weeks	Yes 1 No 2	H3a
	Advice to reduce salt intake	Yes 1 No 2	H3b
	Advice or treatment to lose weight	Yes 1 No 2	H3c
	Advice or treatment to stop smoking	Yes 1 No 2	H3d
	Advice to start or do more exercise	Yes 1 No 2	H3e
72	Have you ever seen a traditional healer for raised blood pressure or hypertension?	Yes 1 No 2	H4
73	Are you currently taking any herbal or traditional remedy for your raised blood pressure?	Yes 1 No 2	H5

CORE: History of Diabetes			
Question		**Response**	**Code**
74	Have you ever had your blood sugar measured by a doctor or other health worker?	Yes 1 No 2 *If No, go to M1*	H6
75	Have you ever been told by a doctor or other health worker that you have raised blood sugar or diabetes?	Yes 1 No 2 *If No, go to M1*	H7a
76	Have you been told in the past 12 months?	Yes 1 No 2	H7b

EXPANDED: History of Diabetes			
77	Are you currently receiving any of the following treatments/advice for diabetes prescribed by a doctor or other health worker?		
	Insulin	Yes 1 No 2	H8a
	Drugs (medication) that you have taken in the past two weeks	Yes 1 No 2	H8b
	Special prescribed diet	Yes 1 No 2	H8c
	Advice or treatment to lose weight	Yes 1 No 2	H8d
	Advice or treatment to stop smoking	Yes 1 No 2	H8e
	Advice to start or do more exercise	Yes 1 No 2	H8f
78	Have you ever seen a traditional healer for diabetes or raised blood sugar?	Yes 1 No 2	H9
79	Are you currently taking any herbal or traditional remedy for your diabetes?	Yes 1 No 2	H10

Step 2 Physical Measurements

CORE: Height and Weight			
Question		**Response**	**Code**
80	Interviewer ID	⌊_⌊_⌊_⌋	M1
81	Device IDs for height and weight	Height ⌊_⌊_⌋ Weight ⌊_⌊_⌋	M2a M2b
82	Height	in Centimetres (cm) ⌊_⌊_⌊_⌋.⌊_⌋	M3
83	Weight *If too large for scale 666.6*	in Kilograms (kg) ⌊_⌊_⌊_⌋.⌊_⌋	M4
84	**For women:** Are you pregnant?	Yes 1 *If Yes, go to M 8* No 2	M5
CORE: Waist			
85	Device ID for waist	⌊_⌊_⌋	M6
86	Waist circumference	in Centimetres (cm) ⌊_⌊_⌊_⌋.⌊_⌋	M7
CORE: Blood Pressure			
87	Interviewer ID	⌊_⌊_⌊_⌋	M8
88	Device ID for blood pressure	⌊_⌊_⌋	M9
89	Cuff size used	Small 1 Medium 2 Large 3	M10
90	Reading 1	Systolic (mmHg) ⌊_⌊_⌊_⌋	M11a
		Diastolic (mmHg) ⌊_⌊_⌊_⌋	M11b
91	Reading 2	Systolic (mmHg) ⌊_⌊_⌊_⌋	M12a
		Diastolic (mmHg) ⌊_⌊_⌊_⌋	M12b
92	Reading 3	Systolic (mmHg) ⌊_⌊_⌊_⌋	M13a
		Diastolic (mmHg) ⌊_⌊_⌊_⌋	M13b
93	During the past two weeks, have you been treated for raised blood pressure with drugs (medication) prescribed by a doctor or other health worker?	Yes 1 No 2	M14

Kava/Yaqona Consumption

CORE: Kava			
Question		**Response**	**Code**
94	Have you ever tried or drunk Kava or yoqona, even one or two bowls?	Yes 1 No 2	B1
95	If "Yes", how old were you when you first tried or experiment with kava?	⌊_⌊_⌊_⌋ years	B2
96	During the last 30 days , on how many days did you drink kava?	0 days 1 1-9 days 2 10-19 days 3 20-29 days 4 Everyday 5	B3
97	Are you likely to smoke Tabaco during or after drinking kava or yoqona?	Yes 1 No 2	B4
98	Are you likely to drink alcohol during or after kava?	Yes 1 No 2	B5
99	Which of the following are you likely to consume during or after drinking kava or yaqona?	1 Lollies 2 Biscuits 3 Bread 4 Soft Drinks 5 Sweet Snacks 6 Cooked food 7 Nothing at all 8 Others	B6
Thank You Vinaka Vakalevu			

World Health Organization

Section 3: Show Cards

Overview

Introduction

Show cards are to be used during the interviews to show or explain the meanings of some of the items asked. While example show cards are presented in this section, it is strongly recommended that countries develop their own ones displaying country specific examples. This will help respondents when answering to the questions.

Show cards

The section contains the following show cards:

List of Work Status

For use with This show card relates to:

Step	Section	Items
Step 1, demographic information	C	C8

Work Status	Description
Government employee	An individual who is hired by a government office or agency and paid a salary. This includes employees of: • Federal • State, or • Municipal governments and their agencies. • Parastatal enterprises, and • Semi-autonomous institutions (such as social security institutions) that are owned by the government. • Institutions like religious schools (if paid by the government).
Non-government employee	An individual who is hired to work and is paid a salary or wages. This includes any employees not working for the government.
Self-employed	An individual who produces goods for sale or earns an income through provision of services to different people or firms. The individual works alone or with intermittent assistance from others, but does not employ anyone for a paid wage or salary on a regular basis.
Non-paid - subsistence farming etc	An individual who spends significant amount of time working for a volunteer organization, family business, family farm or other similar activity without pay.
Student	An individual whose primary activity is engaging in studies at elementary, secondary, university or technical schools.
Homemaker (household chores)	An individual whose primary activity is in carrying out household tasks without being paid.
Retired	An individual who has earned income during some period in the workforce or as an employer and who is no longer working due to age.
Unemployed - able to work	An individual who could work but does not currently have a job or business (excluding homemaker).
Unemployed - unable to work	An individual who cannot work because of his/her health status.

List of Tobacco Products

For use with This show card relates to:

Step	Section	Items
Step 1, tobacco use	T	T1 to T14

- **Cigarettes**
- **Cigarillos**
- **Cigars**
- **Cheroots**
- **Chuttas**
- **Bidis**
- **Goza / Hookah**
- **Local tobacco products** (each country to add to the list)
- **Local tobacco products** (each country to add to the list)
- **Local tobacco products** (each country to add to the list)

Tobacco Show Cards

Examples

The following pictures show a few selected examples of tobacco products. Sites are to develop show cards including specific examples of local tobacco products. These show cards relate to:

Step	Section	Items
Step 1, tobacco use	T	T1 to T14

Manufactured cigarettes.

Roll-your-own (RYO) cigarettes.

Snuff, available in wet and dry form.

Cigars, e.g., cigarillos, double coronas, cheroots, stumpen, chutts and dhumtis.

Continued on next page

Tobacco Show Cards, Continued

Pipe.

Bidi.

Chewing tobacco, e.g., plug, loose-leaf, chimo, toombak, gutkha or twist.

Betel nut.

Water pipe, also known as shisha, hookah or hubble-bubble.

Part 5: The STEPS Instrument
Section 3: Show Cards
Last Updated: 12 June 2008

5-3-5
WHO STEPS Surveillance

Alcohol Consumption

For use with This show card relates to:

Step	Section	Items
Step 1, alcohol consumption	A	A1 to A9a-g

1 standard drink =

1 standard bottle of **regular beer** (285ml)

1 single measure of **spirits** (30ml)

1 medium size glass of wine (120ml)

1 measure of **aperitif** (60ml)

Note: net alcohol content of a **standard drink is approximately 10g** of ethanol. However, standard drinks in different countries can contain different amounts of ethanol. Therefore, countries may have to adapt this measure according to their own standards and will report this measure if different from the standard mentioned above.

Diet (Typical Fruit and Vegetables and Serving Sizes)

For use with This show card relates to:

Step	Section	Items
Step 1, diet	D	D1 to D4

VEGETABLES are considered to be:	1 Serving =	Examples
Raw green leafy vegetables	1 cup	Spinach, salad, etc.
Other vegetables, cooked or chopped raw	½ cup	Tomatoes, carrots, pumpkin, corn, Chinese cabbage, fresh beans, onion, etc. 
Vegetable juice	½ cup	

FRUIT Is considered to be:	1 Serving =	Examples
Apple, banana, orange	1 medium size piece	
Chopped, cooked, canned fruit	½ cup	
Fruit juice	½ cup	Juice from fruit, not artificially flavoured

Serving size One standard serving = 80 grams (translated into different units of cups depending on type of vegetable and standard cup measures available in the country).

Note: Tubers such as potatoes and cassava should not be included.

Typical Physical Activities

For use with	This show card relates to:	Step	Section	Items
		Step 1, physical activity	P	P to P15

WORK RELATED PHYSICAL ACTIVITY		LEISURE/ SPARE TIME RELATED PHYSICAL ACTIVITY	
MODERATE Intensity Activities Makes you breathe somewhat harder than normal	**VIGOROUS Intensity Activities** Makes you breathe much harder than normal	**MODERATE Intensity Activities** Makes you breathe somewhat harder than normal	**VIGOROUS Intensity Activities** Makes you breathe much harder than normal
Examples: • Cleaning (vacuuming, mopping, polishing, scrubbing, sweeping, ironing) • Washing (beating and brushing carpets, wringing clothes (by hand) • Gardening • Milking cows (by hand) • Planting and harvesting crops • Digging dry soil (with spade) • Weaving • Woodwork (chiselling, sawing softwood) • Mixing cement (with shovel) • Labouring (pushing loaded wheelbarrow, operating jackhammer) • Walking with load on head • Drawing water • Tending animals	**Examples:** • Forestry (cutting, chopping, carrying wood) • Sawing hardwood • Ploughing • Cutting crops (sugar cane) • Gardening (digging) • Grinding (with pestle) • Labouring (shovelling sand) • Loading furniture (stoves, fridge) • Instructing spinning (fitness) • Instructing sports aerobics • Sorting postal parcels (fast pace) • Cycle rickshaw driving	**Examples:** • Cycling • Jogging • Dancing • Horse-riding • Tai chi • Yoga • Pilates • Low-impact aerobics • Cricket	**Examples** • Soccer • Rugby • Tennis • High-impact aerobics • Aqua aerobics • Ballet dancing • Fast swimming

Examples of Typical Physical Activities Developed by Different Countries

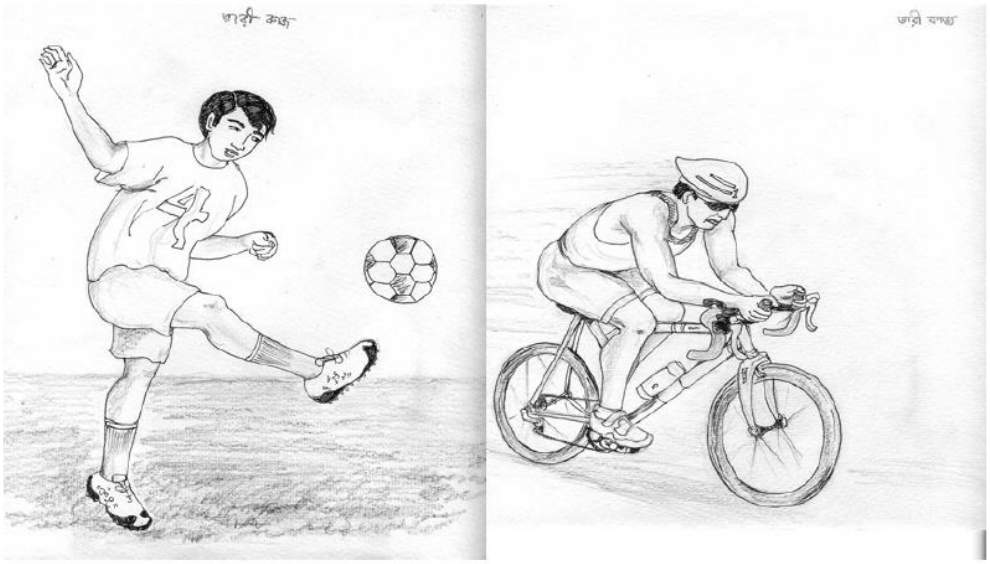
Examples

The following pictures show a few selected examples of physical activity show cards that have been developed and used by different countries. These show cards relate to:

Step	Section	Items
Step 1, physical activity	P	P1 to P15

Bangladesh, examples for vigorous activities at work

Bangladesh, examples for vigorous activities during leisure time



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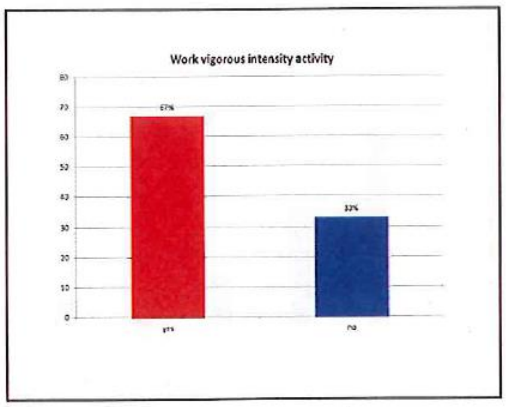
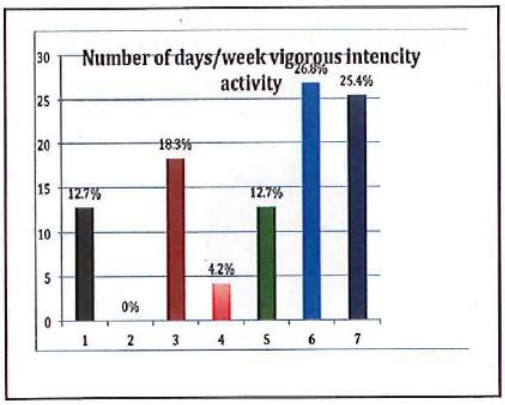
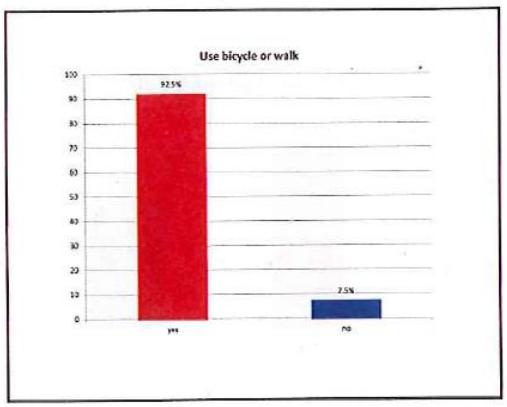
Examples of Typical Physical Activities Developed by Different Countries, Continued

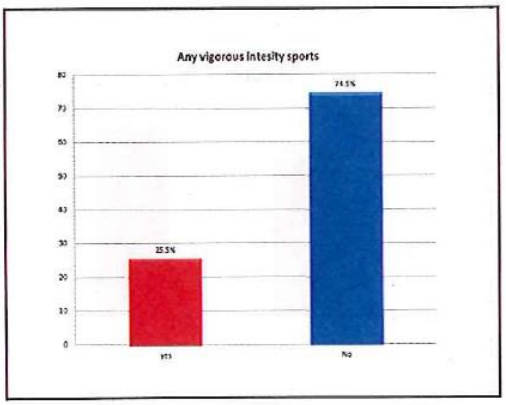
Indonesia, examples for moderate activities

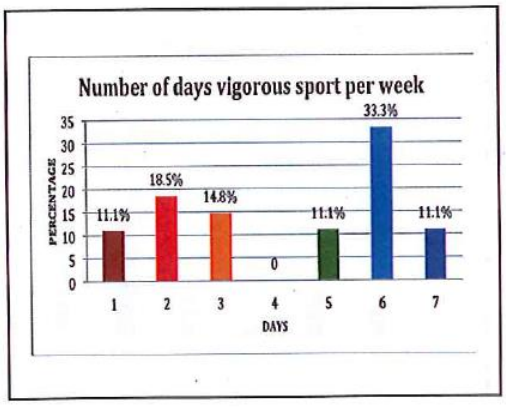
Appendix D

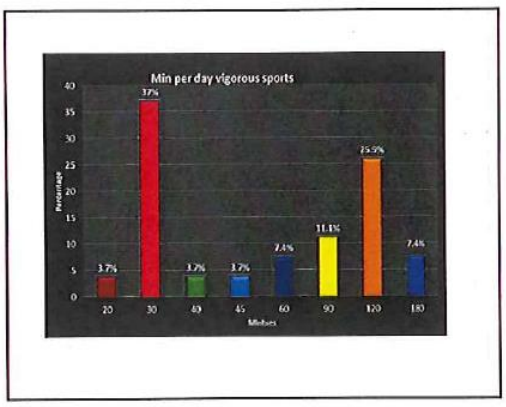

Work vigorous intensity activity

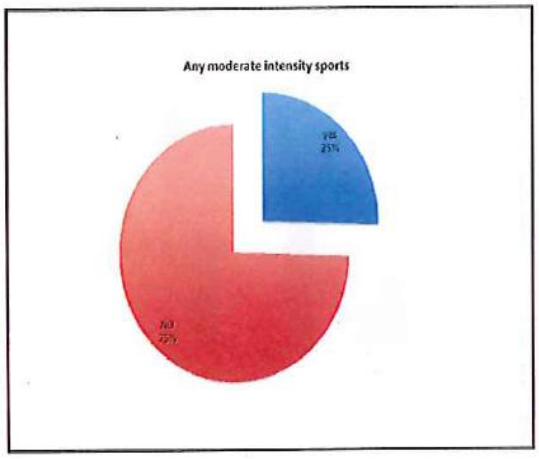

Number of days/week vigorous intencity activity
12.7%
0%
18.3%
4.2%
12.7%
26.8%
25.4%
1
2
3
4
5
6
7

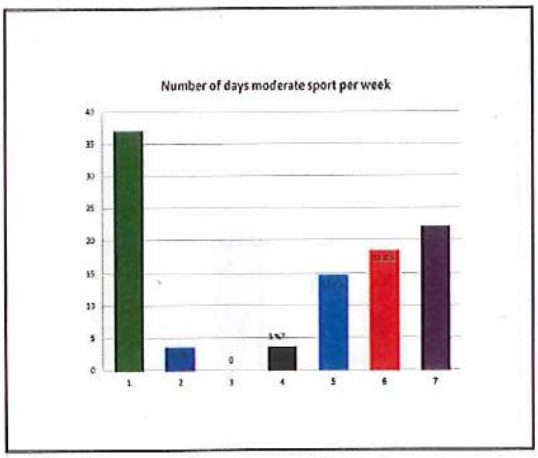

Use bicycle or walk

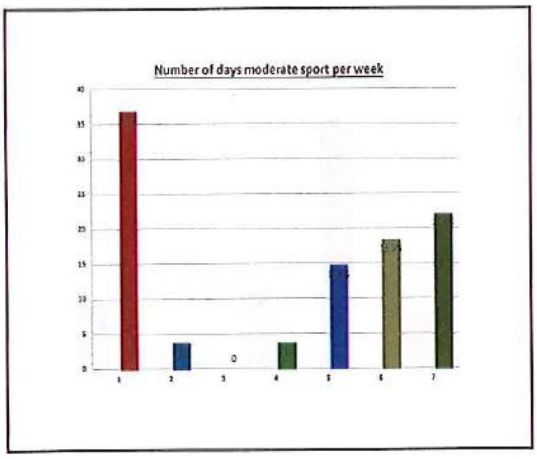

Any vigorous intesity sports

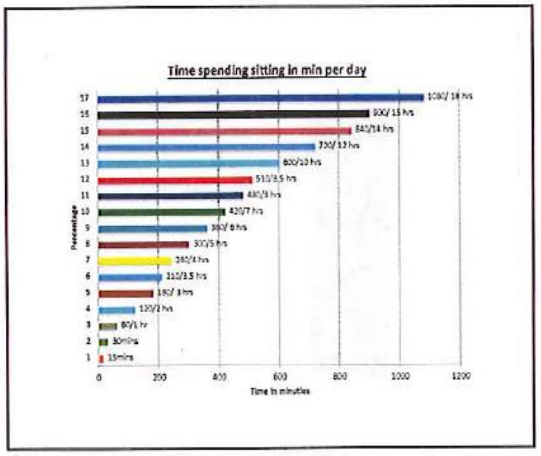

Number of days vigorous sport per week
PERCENTAGE
11.1%
18.5%
14.8%
0
11.1%
33.3%
11.1%
1
2
3
4
5
6
7
DAYS

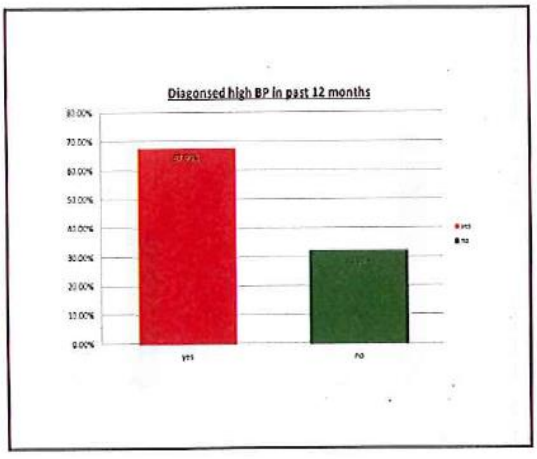

Min per day vigorous sports
3.7%
37%
3.7%
3.7%
7.4%
11.1%
25.9%
7.4%
20
30
40
45
60
90
120
180

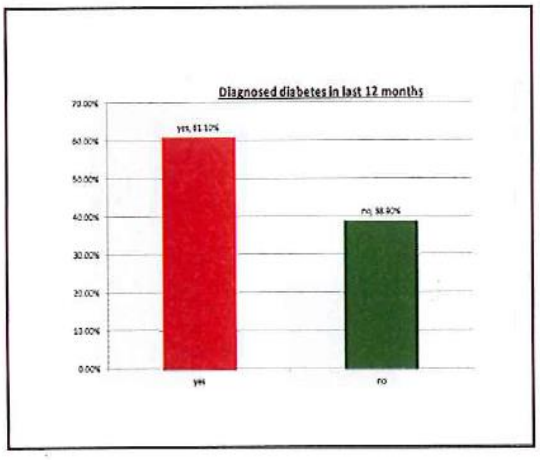

Any moderate intensity sports

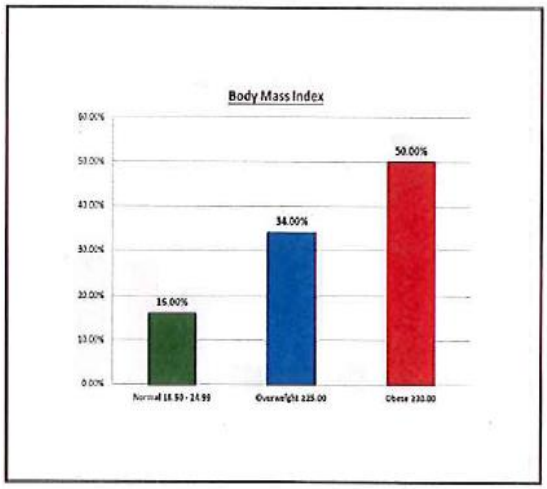

Number of days moderate sport per week

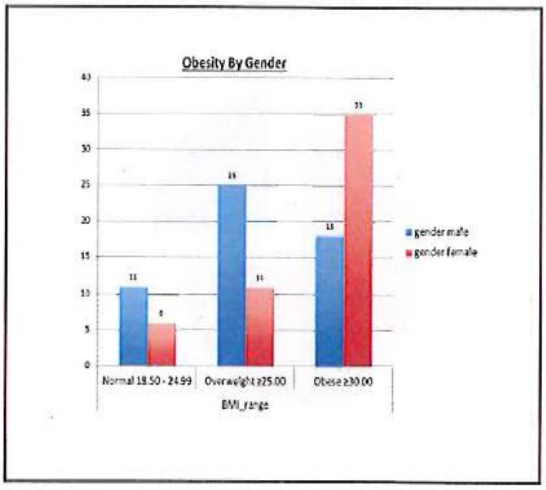

Number of days moderate sport per week

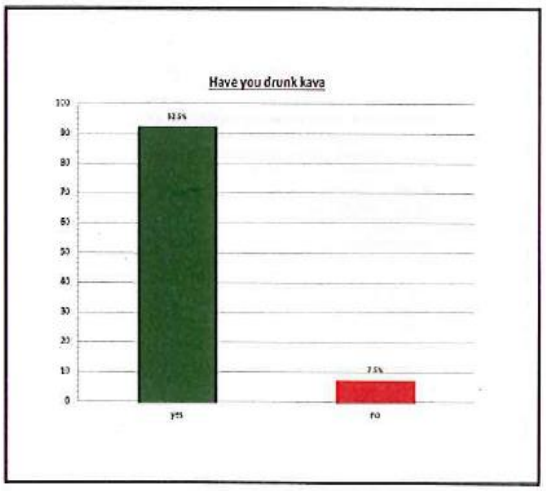

Time spending sitting in min per day
Percentage
Time in minutes

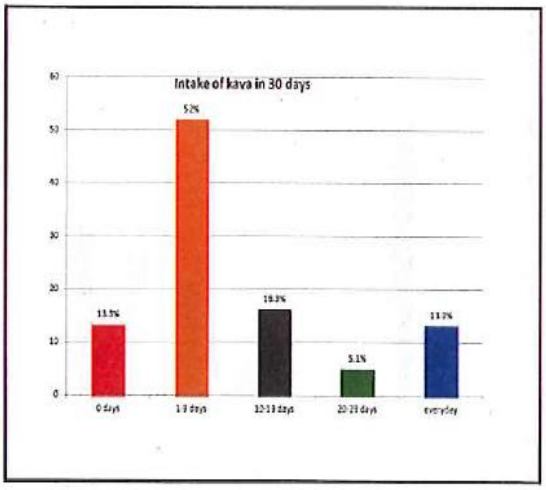

Diagonsed high BP in past 12 months
yes
no

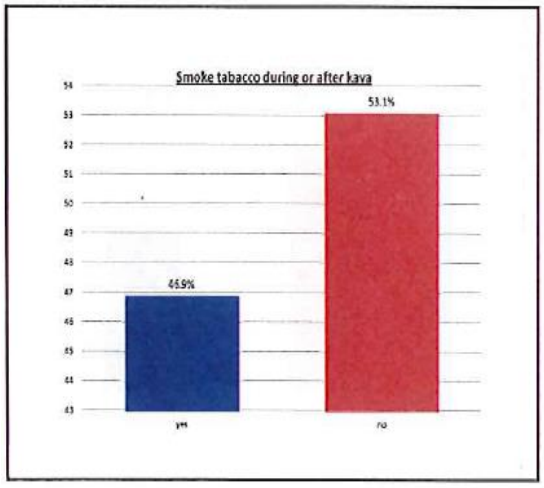

Diagnosed diabetes in last 12 months
yes, 61.12%
no, 38.80%
yes
no

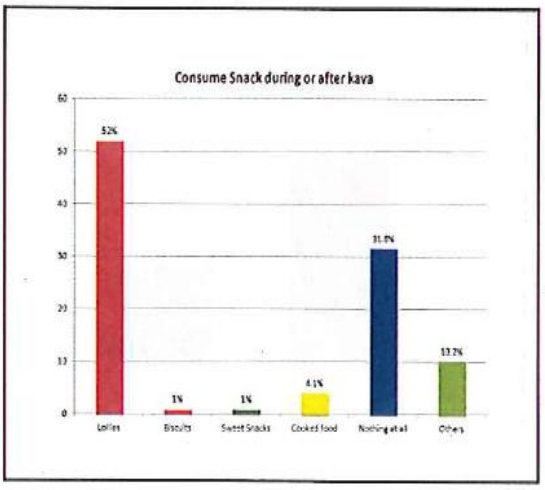

Body Mass Index
16.00%
34.00%
50.00%

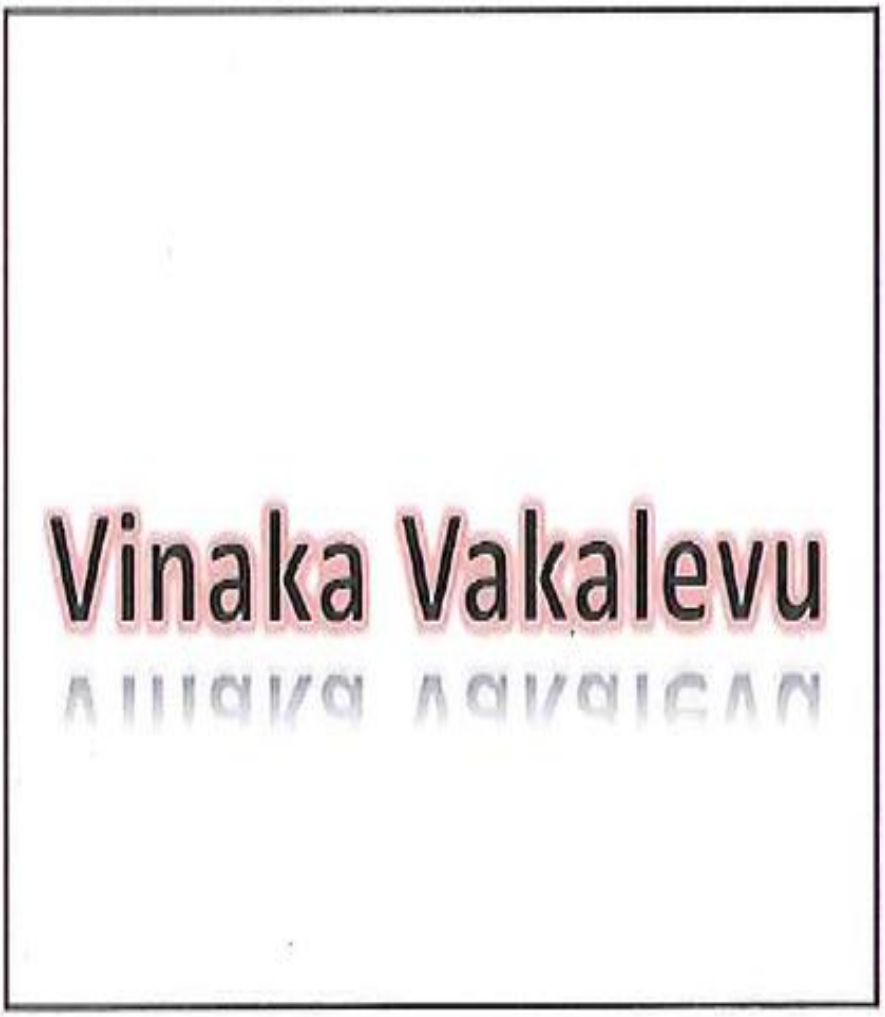

Obesity By Gender
gender male
gender female
Normal 18.50 - 24.99
Overweight ≥25.00
Obese ≥30.00
BMI_range


Have you drunk kava
yes
no


Intake of kava in 30 days
52%
0 days
1-9 days
10-19 days
20-29 days
everyday


Smoke tabacco during or after kava
46.9%
53.1%
yes
no


Consume Snack during or after kava
52%
1%
1%
4.1%
31.0%
Lollies
Biscuits
Sweet Snacks
Cooked food
Nothing at all
Others


Vinaka Vakalevu

Appendix E

Interview Questions

Interviewer_____

Date_____

Person being interviewed

_____

Village _____

1. The questions I'm going to ask today are about healthy eating and getting enough physical activity. Let's start with good nutrition, or healthy eating.
   Think about your experiences, and the experiences of your family and friends. What have you found to be the most useful for helping you eat more nutritious foods and drinks?

PROBE: [If they don't mention any local services, help, or information sources] Are there helpful services or supports locally in our county that have been useful?

PROBE: You have mentioned _____ and _____ [Read back all local services, helps, or information sources that they gave you.] What made them helpful?

2. What do you wish were available locally to help you or your family eat more nutritiously?

PROBE: How might that be helpful specifically?

3. In your experience, what makes someone feel that healthy foods and drinks are important?

PROBE: What makes people give up on eating healthy foods or drinks?

4. Now let's talk about being physical active, whether it's exercising, or even just being more active in a person's daily life. How many of your family and friends feel that being physically active is important?

PROBE: What are the benefits of being physically active?

5. Think again about your experiences, and the experiences of your family and friends. What have you found to be the most useful for helping you get more exercise, or be more physically active?

PROBE: Are there helpful services or supports locally in our county that have been useful?

PROBE: You have mentioned _____ and _____ [Read back all local services, helps, or information sources that they gave you.] What made them helpful?

6. What do you wish were available locally to help you or your family be more physically active?

7. Think about both good nutrition and being physically active. What are the best sources of information on either one in your community?

8. Now let's talk about when you are at the doctor's office. Do you have a regular doctor that you see?

PROBE: What has your doctor told you about healthy eating, or being physically active?

PROBE: Has your doctor recommended that you lose weight?

PROBE: What do you wish you had learned from your doctor?

PROBE: Have you ever wished that you could talk to someone for more information?

9. Now let's talk about your body image. Are there any cultural reasons to have big body size?

10. Now let’s think about your life overall - at home, or out in the community. How important are the people around you in helping you eat well, be physically active, or control your weight?

PROBE: Who are the most important support people for you in that regard?

11. How about where you live? Does your neighbourhood or community have places to be physically active?

PROBE: Are these place or facilities accessible to you and your family (in location, affordable, convenient, safe, etc.)? [If not] What would make them more accessible?

12. Here’s our last question:

Do you have any suggestions for us on ways to help the people you know to eat better, or be more physically active?

PROBE: What about your community, or youth groups - do you have suggestions for ways they could be more supportive of healthy eating or physical activity?

Thank you for your time

Appendix F

Ethics Application Approval-- 1400000565

Dear Dr Marguerite Sendall and Mr Kamal Singh

Project Title: Understanding the social cultural context of obesity in rural and remote areas of Fiji to target obesity: The Participatory Research Approach

Ethics Category: Human - Low Risk
Approval Number: 1400000565
Approved Until: 18/09/2015 (subject to receipt of satisfactory progress reports)

We are pleased to advise that your application has been reviewed and confirmed as meeting the requirements of the National Statement on Ethical Conduct in Human Research.

I can therefore confirm that your application is APPROVED.
If you require a formal approval certificate please advise via reply email.

CONDITIONS OF APPROVAL
Please ensure you and all other team members read through and understand all UHREC conditions of approval prior to commencing any data collection:
Standard: Please see attached or go to
www.research.qut.edu.au/ethics/humans/stdconditions.jsp
Specific: None apply

Decisions related to low risk ethical review are subject to ratification at the next available UHREC meeting. You will only be contacted again in relation to this matter if UHREC raises any additional questions or concerns.

Whilst the data collection of your project has received QUT ethical clearance, the decision to commence and authority to commence may be dependent on factors beyond the remit of the QUT ethics review process. For example, your research may need ethics clearance from other organisations or permissions from other organisations to access staff. Therefore the proposed data collection should not commence until you have satisfied these requirements.

Please don't hesitate to contact us if you have any queries.
We wish you all the best with your research.

Kind regards
Janette Lamb on behalf of Chair UHREC
Office of Research Ethics & Integrity
Level 4 | 88 Musk Avenue | Kelvin Grove
p: +61 7 3138 5123
e: ethicscontact@qut.edu.au
w: http://www.orei.qut.edu.au

MINISTRY OF INDIGENOUS AFFAIRS, PROVINCIAL DEVELOPMENT
& MULTI-ETHNIC AFFAIRS

DEPARTMENT OF INDIGENOUS AFFAIRS
FIJIAN TRUST FUND COMPLEX
87 QUEEN ELIZABETH DRIVE, SUVA
P.O.BOX 2100, GOVERNMENT BUILDING, SUVA, FIJI.

TELEPHONE: (679) 3100 909 FAX: (679) 3317 077

01 June 2014 *File ref: IFLC 4/3*

To whom it may concern

Re: ***Approval for Kamal.N.Singh to conduct research in Fiji***

Mr Kamal Nand Singh, who is currently a Doctor of Health Science student at Queensland University of Technology In Brisbane Australia, intends to conduct a research on "Understanding the Sociocultural context of obesity in rural and remote areas of Fiji".

The Institute of Itaukie Language and Culture endorses and supports him conducting his research in local Fijian villages because his research can add to the body of knowledge on the Itaukie traditional knowledge.

It is hoped that he will be given the support and attention to enable him to collect the necessary information for his research.

Vinaka vakalevu.

Misiwaini Qereqeretabua
For, Permanent Secretary Indigenous Affairs

Appendix G

What people said in the 1st phase of this community based participatory research

4. Food knowledge and Health system

What you said about the current situation:

"We have lack of health awareness on healthy eating at community level"

- Health workers only come and fill paperwork and leave
- Limited information and awareness from village health workers
- Health awareness on healthy eating is only available at local hospital.
- Your comments

5. Self farming

What you said about the current situation:

"Our family not active together in farming"

Proposed strategies improvement on self farming

- Increase local farming/ hunting
- Increase backyard gardening
- Need more support from government agency.

Your comments

6. Cultural practices in the village

What you said about the current situation:

"We eating large amount of food to keep strong body"

- Women eat after man and eat left over food in large amounts.
- People have poor insight about healthy eating

Your comments

1. Eating healthy food

What you said about the current situation:

"Local food is always available from the farm".

- Mostly eating green vegetables and local seasonal fruits.
- People eat large amount of food as they are costless.
- Less availability of fresh vegetables and fruits due to farm far away from the home

Your comments

2. Junk food

What you said about the current situation:

"Junk food tastes good and is fast to cook"

- Increase consumption of junk food.
- Selling cheap process food in the village shops.
- Introduction of electricity to village increased in process food intake.

Your comments

3. Village feast

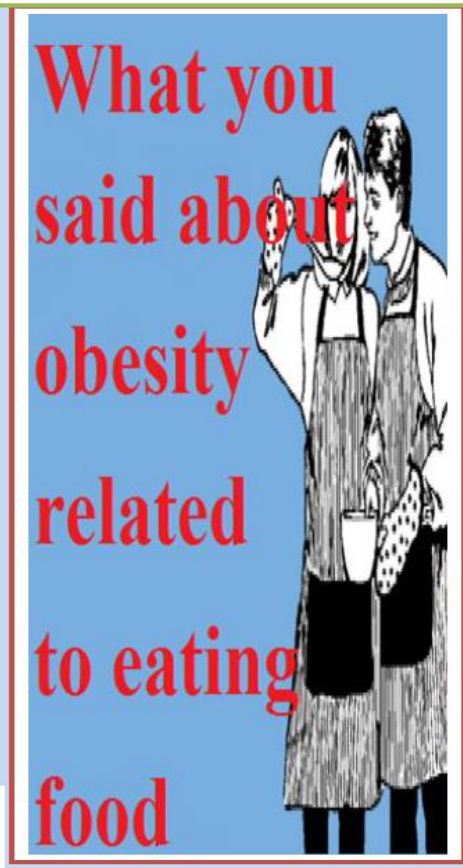
What you said about the current situation:

"We eating large amount as there are variety of Food"

- Free food in the village feast
- People eat more food in social gathering
- Increase eating of Process food
- Woman love eating and eat left over food in large amount.

Your comments

Please read the research inteview summary which was based on the obesity. Please write your comments and suggestion in section and bring this brochure to the village meeting.



1. Motivation

What you said about the current situation:

"We people are lazy to do exercise in the village"

- Lack of motivation from the families and community.
- Resources are available in the village but lack of motivation.
- Lack of incentive to do exercise

Your comments

2. Space for playing sports and doing exercise

What you said about the current situation:

"Our village women not able to do exercise due to lack of space"

- Lacking of space for playing sports and doing exercise in the village.
- Men are only allowed to access school playground.
- Need separate playground for females.
- Develop indoor space for exercise for woman.

Your comments

3. Physical Education and awareness from local health

What you said about the current situation:

- Lacking physical activity education at community level
- Multimedia ineffective in the rural areas.
- Lack of support from health sector on women health

Suggestions you have made:

- Local health need to come to community level and provide resources and run awareness programme.
- A multisectorial approach required to meet needs of the village.
- Increase knowledge on exercise.
- Requiring information given by local medical team when visiting Hospital.

Your comments

Please read the research inteview summary which was based on the obesity. Please write your comments and suggestion in section and bring this brochure to the village meeting.

4. Cultural practices in the community.

What you said about the current situation:

"As women our roles are to look after the families and doing domestic duties"

- Playing sports is social activity for men only.
- women not allowed to play sports with men in the village
- Lack of support for women in the village from men.
- Separation of male and female while playing sports in the village.
- Lack of ownership of self care.
- Females fear of elders when doing exercise in the village.

Your comments

5. Cost of sports equipment

What you said about the current situation:

"We in the rural areas our income is low and lack of funding to buy sports gear"

- No incentive from the government agency or rural community.
- Lacking of funds to buy sports gear.
- No rural community interventional programs related to exercise and sports.

Your comments

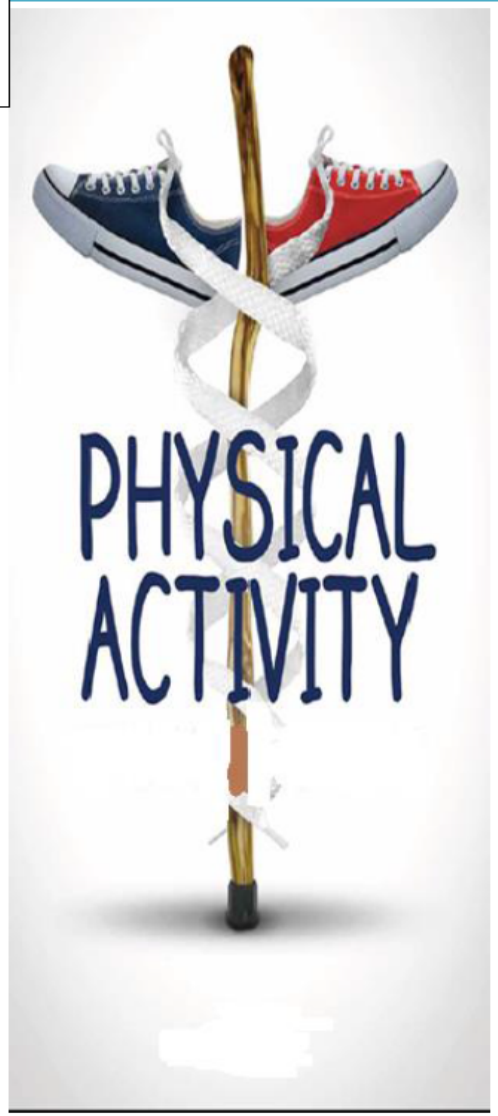
6. Support from community and families

What you said about the current situation:

"Our village monthly meeting need to be more focus on health issues in the community"

- Role models support needed in the village.
- Youth group/ women club need more support from the community elders
- Families don't support females to play sports.
- Community needs to be active together for better health outcomes.

Your comments



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